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THE PROCEEDINGS AND REPORTS AT THE BRIGHTON CATTLE SHOW IN OCTOBER, 1827.

From the commencement of the annual cattle show at Brighton, it has been the invariable practice of the Trustees of the Massachusetts Society for promoting agriculture to publish, in their *own* journal, all the reports of the Committees appointed to award premiums. Indeed it is the practice of all the European societies. The French society for the encouragement of the arts, and of agriculture, publish a volume of 300 pages, containing all the details of their triennial exhibition. The uses and benefits of such a publication are too obvious to require elucidation. It furnishes in a more permanent form, than any newspaper can secure, a history of the progress of art, of itself curious and interesting. It affords the best evidence of the activity and beneficial effects of the society. It is the best reward, which can be offered to the intelligent and successful cultivator, or mechanist, often of much greater value to him, than any pecuniary premium. Hence we invariably find, that inventors of useful implements are very anxious to have their inventions favourably spoken of, even if they are judged not to come within the scope of our premiums.

Some persons may think, that the publication in one newspaper is sufficient, and that the pages of our journal should not be occupied by matter *once* published in *ano-*

ther form. We think otherwise; our journal is taken by many, who do not, we are sorry to say, take the valuable paper, the New England Farmer, in which our reports are first published. Such persons, having paid for our journal, think they have a right to possess the proceedings of our board. Others, who take the New England Farmer, and are possessors of complete sets of our journal may prefer to have these proceedings in that form, which they may think more convenient for preservation. There are many persons who take our journal, in *other* states, who do not take the New England Farmer.

These reasons have satisfied us, that the course we have adopted is a proper one. We could, indeed, withhold the publication of our reports from the public journals; but besides that such a course would be churlish, or at least ungracious, the competitors would be dissatisfied with such a delay. We would hazard another remark, that there is a too strong disposition in *all* the editors of public journals to decline copying from each other. The public, in consequence, lose a great amount of interesting information. Instead of the result of many intelligent minds, you obtain (if you take but one or two publications) only the thoughts and the labours of the one or two, to which you subscribe. Our rule is different. We select from all sources, what we think interesting in them.

For example.—The American Farmer is a very interesting work, more adapted to be sure, to the state of agriculture in the middle and southern states than to our own. Few farmers in this state ever see it. Yet there are often interesting discussions in that able journal, which would be read with pleasure and profit, by that class of our practical farmers, who have not an instinctive dread of knowledge, or an unhappy contempt for all, who unite reading with practice. There are two other works of another description, the Memoirs of the New-York Agri-

cultural Society, and of the two Pennsylvania Societies; both of which are full of interesting matter. We avow, that we feel no such pride of authorship, as to fill our journal, with our *own* remarks, when we perceive, that another work seldom or never seen by our citizens, contains more valuable materials than any which we could, at the time, furnish.

In this connexion, we, with unfeigned respect, and with that submission, which as good citizens, we are bound to cherish towards the government, which protects us, would beg leave to advert to a proposition, made in a former legislature, to repeal the law affording a patronage to the Massachusetts Society for promoting agriculture. Unquestionably, it is not only the right but the solemn duty of the Legislature to withdraw its support from any institution, which it may have patronized, whenever it shall discover that its bounty has been of no, or of little public value, or if that bounty has been misapplied. In the year 1792 the Legislature saw fit to incorporate a body, comprising members from every part of the state, including Maine, for the purpose of fostering the interests of agriculture, and of affording to a class of citizens, comprising three fourths of the whole population, the means of knowing, not only the improvements in their art, which should be made in Europe, but the *local* improvements made by skilful and ingenious farmers in our own country. The extent of the patronage amounted to a grant of a township of Eastern lands, then worth in the market about 2000 dollars, and the payment of the expense of printing their proceedings, which for many years did not exceed two hundred dollars per annum, equivalent to *half* of *one day's* pay of the members of the Legislature. When our society became more active, and published two numbers a year, it amounted to four hundred dollars a year. For this trifling sum, the Massachusetts Society for promoting agriculture, furnished from 400 to 600 co-

pies to the members of the Legislature gratis, and thus enabled them to carry home to their respective towns, the result of the labours of the Society, and thus to spread them throughout the state. It may be said, however, that they were of *no value*. It does not become us to say, that they were; but we may be permitted to state the facts, that our journals have been subscribed for, by many citizens of this state, and of other states, and of the British Provinces adjoining to us; that they have been spoken of with great commendation in this country and in Europe; that they have been preserved and bound up by hundreds of individuals, and that they, in fact, contain, as great a mass of information from practical farmers, on the great subjects of agriculture—on cattle—the making of butter, cheese and cider, on *general* cultivation, and on horticulture, as can be found in any equal number of volumes. That errors have been often found in them, and incorrect opinions advanced is true, but it is not more true, than it is of other miscellaneous journals. The only way of eliciting truth is a free discussion, and if one writers err, ten are found to correct the error. The Massachusetts society for promoting agriculture are not benefited by the grant in question.

The only effect of withdrawing it, would be, to oblige them to withhold an equal amount of premiums, which they now grant to every part of the state. Three fourths of their premiums are dispersed in counties not contiguous to the capital. If the agricultural interest are convinced that their art *cannot* be improved, or is *not* improved by our efforts, or if they think, that the small bounty they now bestow, is productive of less advantage than the diminutive sum, which they pay, they *ought* to withhold it, and we shall cheerfully submit, and rely upon our own diminished means, to do as much good as we can. We are free to say, however, as we have a right to say, that the policy of the proposed measure is at least ques-

tionable. We are aware that these remarks will be too late to affect in any way (even if they deserve it) the decision of the Legislature; yet they may produce some effect on *public opinion*, and at some future period, induce the Legislature to grant *something* for that great body, who pay, and who, by their industry, contribute so much to the strength and prosperity of the state.

The Massachusetts Agricultural Society can say *something* in their own behalf. While our two public ministers, Livingston and Humphreys, are entitled to credit from the introduction of Merino sheep, it should be recollected, that the Massachusetts Society was the *first by its premiums* to encourage their introduction, and thus destroyed the monopoly, which these gentlemen, for many years, enjoyed. In the same manner, they encouraged the introduction of long woolled sheep, and they have been the organs, through whom, many other fine animals have been introduced into the state. To agriculture, they have been of no small service, in introducing root culture, and to horticulture, they humbly believe, they have rendered invaluable services, by introducing many culinary plants, now in common use, and deemed indispensable in the great markets; while they have added a long catalogue to the mean list of fruits, which Massachusetts possessed thirty years since. Still, if the Legislature esteem these efforts of less value, than the small annuity, which they commit to them, as public stewards for the general welfare, they will never hear a word of complaint from this society.

Address of the HON. JOHN LOWELL, *President of the Massachusetts Agricultural Society, delivered at the public meeting of the Society on the 17th inst. previous to the declaration of the premiums awarded to the competitors at the Cattle Show.*

THE Trustees of the Massachusetts Agricultural Society this year resolved to make a very important change in their arrangements—instead of extending their show to two successive days, they determined to imitate the example of other societies in this state, by confining it to *one*. It may naturally be asked why such a measure, so convenient to competitors, was not adopted before. To this we reply that our situation was, in many important respects, different from that of the interior societies. Our society was a general one, offering premiums throughout the whole state. We had two classes of competitors—those in the adjacent counties of Middlesex and Norfolk, and those from the most remote parts of the state. With respect to those who came from a great distance, it was impossible for them to return home, either the night of the show, or even the next night. It was therefore of comparatively small moment to them, whether they were or were not detained one night longer. With respect to competitors in the adjoining counties, most of them could return home the *first* day, and were not competitors on the *second*. The Norfolk and Middlesex farmers, who entered into competition in the ploughing matches and working cattle, came only on the *second* day. But to the Trustees themselves and to the spectators, the repetition was very inconvenient, expensive and tedious. The Trustees, influenced by these considerations, have this year unanimously decided to try the experiment of confining the exhibition of cattle, the ploughing match and of working cattle to one day. This change obliged them to give up all preparatory meetings, and to make the day purely one of business. The same necessity

obliges us to dispense with all formal addresses, and to limit ourselves to the simple declaration of the premiums awarded, without those explanations of the grounds upon which the decisions are founded, which have been usually given on such occasions. Indeed there is less necessity for such minuteness. In the origin of the Institution, there were little unfounded jealousies to be overcome—there was not that entire confidence in the rectitude and fairness of the judges, to which experience has demonstrated they were entitled. It was improperly viewed as the exhibition of the more opulent farmers, in which a plain cultivator stood a very humble chance. All these errors and prejudices (for they were always such) have been dissipated by time. The whole course is so fair—the Trustees have so little agency in awarding the premiums, they are so entirely under the control of experienced graziers and farmers, that we need no longer to make apologies or excuses for our decisions. The question, however, will naturally occur, and it ought, in every successive year, to be repeated, have these shows been productive of serious and lasting benefits to the agricultural interests, or which is the same thing, to the nation? This is a question of *fact*, which every man will settle in his own mind according to his experience, or his prejudices. For myself, I have no doubt that the effects, remote and immediate, of these public exhibitions, have been as great as their most sanguine friends anticipated. I cannot better introduce a few remarks on this topic, than by a very apposite quotation from a recent British work, inserted in a late number of the New England Farmer.

"The great body of cultivators in Great Britain, whose farms are of considerable extent, have generally received a suitable education, by which their minds are enlarged; animated with a desire to improve their condition in the world, and rendered equally quick to perceive, and ready to adopt, such improvements as may occasionally be pro-

posed. In *former* times, it was objected that farmers were *obstinate* and *bigoted*, averse to every kind of innovation upon established practice, and persisting in ancient systems, even after their deficiency and inutility had been ascertained in the most decisive manner. Whatever truth there might formerly be in the objection, its force is now *completely* removed, there being no set of men *whatever more open* to conviction or more willing to adopt new practices, than the British farmers of the present day. This change of disposition has been accomplished by a general circulation of agricultural knowledge, since the National Board of Agriculture was established, by numerous periodical publications on rural economy, and by that increase of wealth which flowed from the exertions of the farmer, and which naturally stimulated a search after *new* improvements. According to the measure of attention bestowed upon the education of farmers, it may be expected that improvement will hereafter advance. A man of uncultivated mind may hold a plough, or drive a harrow in a sufficient manner, but he will seldom introduce an *improvement*, or be the means of effecting any change in the established system of rural economy."—*Brown's Treatise on Agriculture.*

This extract from a British work is truly cheering to the friends of agricultural improvement in *our* country. I know my audience too thoroughly to rely upon their unqualified acceptance of the truths therein alleged without due evidence. We of New England, are a cautious and thinking people, slow in adopting new opinions. Long may we continue such. Well, then, are the facts stated by the writer *true*, as respects *England?* They are within my own personal knowledge, derived from authentic documents, and ocular evidence, strictly true, and in no degree exaggerated. British agriculture in 1780, when the Royal Institution for its promotion, was founded by Parliament with an ample donation of $22,000 a year, was in a better

state than ours is at the *present* time. Yet the progress has been so great in Great Britain since the establishment of the National Board of Agriculture, and of the Bath and West of England Society, for the promotion of the same objects, that it has been fully proved by official documents, that the produce of British farming industry, with a worse climate and soil, is to that of France, taking the number of acres and of labourers into view, nearly as two to one. Let us illustrate this important fact by reference to *one* successful cultivator. Mr. Coke, of Norfolk, whose name ought to be familiar with every American as well as British farmer, inherited some thirty-five years since, a great landed estate in Norfolk, the whole rental of which was only £2000, or $8800 a year. Being an active and intelligent man, he introduced the Tullian husbandry, which consists in frequent rotations of crops, and in sowing in drills; in short, in a more spirited use of the plough and other improved instruments. In the life time of this one man, and he is still alive, by the plough alone, and by adopting proper successions of plants, he has raised his rental from $8800 to $200,000 a year; in other words, increased the value of his estate 24 times. No speculations in banks, no mining discoveries—no, not even Potosi, in its virgin state when silver was found upon the surface, can show such an appreciation of property as has been produced by skill, enlightened skill, applied to the surface.

Yet all this has been effected by *tenants*, not *owners* of the soil, but under leases for 21 years, subject to the hazards of a refusul to renew the leases, by a *less enlightened* heir. These are facts not to be disputed, and they prove that agriculture in the short space of one man's life, has undergone improvements of which antiquity had no conception.

Is it possible that the *freemen* of this country, *owners* of the soil, are not as capable of improving the condition of their farms? Most assuredly, they are so—they are doing

it as rapidly as could be expected, and they are alive to the advantages afforded to them by the attention paid to the subject, by well informed men; by the circulation of facts and experiments in useful periodical journals. The very fact that such journals are so *generally* patronized, is of itself conclusive proof of the progress which they are making in knowledge, and of their zeal to acquire more. The friend of improvement should be as patient as he is firm; changes in habits, and especially in the habits of a retired class of men, must be slow; the manufacturers, vigilant, and combined, eager, and quick-sighted, learn in a week, or a month, any new improvement introduced by their rival, however distant; but the farmer is slow, his interest is less direct; without capital, he dreads a new experiment; but still his progress is perceptible, and unquestionable. We, who have been called by our official duties to watch the improvement in every branch of agriculture, perceive a vast change within the last twenty-five years; new fruits, new roots, and grasses, new modes of culture, greater attention to the preservation and making of manures, are most obvious on every side; our meadows are better ditched; we learn that sand and gravel are better for them, than the finest soils and the richest manures. Still there are some hundred thousand acres of meadow land which produce grass scarcely worth the labour of cutting, which may, by skill and little labour, be rendered the most productive parts of our farms.

Thirty years since, the general complaint was, that our old orchards were perishing, and no new ones planted. The complaint was well founded, as all of us of three score years of age well know. This society, alarmed at the fact, offered more than nine years since, a liberal premium—a premium of itself sufficient to defray the whole expense of planting an orchard of apple trees, and they have continued the premium from that time to the present. No application has however been made for this premium

until the present year. This year four competitors presented themselves for this premium.

We need not say how grateful such applications were to us. They were proofs that our premiums had excited the public attention; they gave the satisfactory assurance that the apple tree, the farmer's best friend, was no longer neglected; its fruit, the most profitable production of a farm; its product in cider, the best possible substitute for spirituous liquors, and the abundance of which, if well manufactured, is much more likely to check the use of distilled spirits, than all the associations and too little discriminate representations which the well meant zeal of pious and excellent friends to virtue could put forth.

At any rate, the abundance of a pleasant and wholesome beverage, of less intoxicating qualities, is the best auxiliary to the laudable efforts now making to diminish the consumption of ardent spirits. In all these views, so many applications for premiums for orchards planted since 1816, and which will be in perfection in the days of our grandchildren, were to be regarded with great interest.—There will be some benefit we hope derived from giving a brief account of these several applications.

The applicant, whose orchard we first examined, was Charles Davis, Esq. of Roxbury. To those who knew the spirit and intelligence with which he has managed a rough and neglected farm, it will be no surprise to learn, that in a piece of ground entirely covered with rocks and bushes in 1819, he has an orchard of the most uncommon growth and beauty. The whole number of apple trees planted out by him since that period, is 150; such was their flourishing state that the committee, on leaving his farm, thought that he must be the successful competitor. For his laudable and successful exertions, the Trustees award to him an honorary premium of ten dollars. From his estate they proceeded to examine the orchards of Mr. ——— Baldwin of Milton; there could scarcely be a more interesting ex-

hibition than this farm afforded. Mr. Baldwin, an old revolutionary soldier, took possession of this farm when he was 55 years of age; it was in the roughest possible state; he has made a considerable portion of it a perfect garden; his apple trees planted in 1815 and 1816, are, we believe, the largest and finest in the state. He has also done great honour to himself, and benefit to the public, by forming an extensive nursery of fruit trees, for which we have been, and still continue to be, in a great measure, tributary to the cultivators of other states. When we left Mr. Baldwin, it was with a deep conviction of his rare merit, as a skilful cultivator, and with a hope, that we should be enabled to award to him the society's premium of 50 dollars—but subsequent examinations render this impossible, consistently with our duty, and consciences. We have therefore recommended to the Trustees, and they have agreed to award to Mr. Baldwin, an honorary premium of 10 dollars, for the spirit, intelligence and perseverance, which he has displayed in his nursery and orchard. Some time after, the Committee, consisting of the Hon. Messrs. Welles, Sullivan, Guild and myself, visited the College farm, which was under a long lease to Mr. Nahum Hardy. Mr. Hardy claimed the society's premium. We there found an orchard of eight acres, reclaimed from the wildest state, and filled with a most beautiful display of apple trees, 500 in number. The state and condition of the trees evinced the greatest care and skill, and we congratulate the public, who are owners of the farm, through the medium of the University, on their having a tenant so capable of increasing its value, and who appears to have devoted his capacity to so good effect. Immediately after viewing Mr. Hardy's orchard, the Committee proceeded to examine a younger orchard, planted by Elias Phinney, Esq. of Charlestown and Lexington. Mr. Phinney selected a most favourable spot, declining towards the south, covered five years since with shrub oaks and rocks, and there

planted his orchard, 400 in number, of the best fruits. The trees were in the most beautiful condition—every superfluous twig carefully and judiciously extirpated, and their general health gave the best evidence of judicious management. If the premium of the society had been offered to the orchard, in all respects best managed, without any regard to *number*, Mr. Phinney would probably have carried the premium—but as Mr. Hardy's trees were in an excellent condition, and exceeded Mr. Phinney's in number by 100, the committee consider Mr. Hardy entitled to the society's premium of 50 dollars, and they award it to him accordingly.

The general state of Mr. Phinney's farm was, however, so perfect, considering the means applied to it—there was so much good judgment, in all his operations—he having made also the first, and a very successful experiment in making wine, from the native grape, that your committee recommended, and the trustees have voted, to present to Mr. Phinney a cup, of the value of 20 dollars, with such inscriptions as a committee of the trustees may devise, indicative of his merit, as a farmer. Well then, my fellow citizens, shall it be said, that no good results from these societies? Is it of *no* benefit that men, who merit well of their country, have a *sure* and *impartial* means of making their merit *known?* Are our farmers so debased, so indifferent to their own best interests, and reputation, as not to feel excited by the success of *others?* Why should we presume it, when we see, at once, four competitors, distant from each other, in Norfolk and Middlesex, competing for *one* of our most *important*, and hitherto neglected premiums? We hope yet to see a claim for our premium for forest trees. Let us be patient. Improvement in every branch of industry is slow, but certain—in agriculture, more slow than in any other—but as it is *more slow*, so it is more permanent, and more important. Let us all, then, be moderate in our expectations, but *firm* in

our reliance on eventual success. Our temperate climate, our natural industry, zeal and intelligence, will not deceive us. New England will be, what she always has been, the nursery of arts, of intelligence, of enterprise, and the abode of virtue, obedience to the laws and love of liberty. She will never desert her rulers, whether national or state, so long as she is convinced that they consult the *true* interests of the republic.—She will forever cherish agriculture as the acknowledged foundation of all national wealth, while she will recollect that her numerous harbours invite her to avail herself of the benefits of foreign commerce, which has raised her to her present comparative importance, and produced a surplus capital, which can in times of peace, only be successfully employed in manufactures and internal improvements, to which the rare mechanical skill, untiring industry, economy and perseverance of her citizens especially invite her, while her numerous and inexhaustible waterfalls afford her facilities, which no other portion of our country can boast. Let our maxim forever be, "A liberal union, without jealousy, of agricultural, manufacturing and commercial skill." By a strict adherence to this liberal principle, the population of New England must increase in wealth and power—power, of the noblest description, most advantageous to the nation, the power of mind; a moral and beneficent power, which ought not to be the subject of jealousy or envy, but which will command the respect of our sister states, while it will essentially promote *their best* interests. We must be forever supplied with our flour and cotton, from the South, but we shall send them, in return, their own products in a manufactured state, and contribute to their *wealth*, their comforts and their luxuries, at least as much as to our own. Such seems to be the order of Divine Providence. Our comparatively sterile soil, and severe winters, oblige us to be the labourers for our brethren. Local and temporary prejudices may retard, but can never change the order—the beneficent order of Providence.

It would naturally be expected, that something should be said of our present show, but a moment's reflection will convince our audience that this is entirely impracticable. The new arrangements have left no trustee at leisure to make any written remarks, and how could I, engaged in examining and aiding in the decision, of three distinct classes of animals, be expected to say any thing of the others, or of the ploughing match, or the working cattle, of whose respective merits I have no knowledge. All I can say is, that in my own branch of duty the show was highly respectable. Full reports will be made by the chairmen of the several committees, which will assign the grounds of their respective decisions. It would be, however, a gross neglect on my part, if I should omit to notice the renewed exertions of our fellow countryman, Gen. Coffin, to contribute towards the agriculture of his native state. Gen. Coffin, it is well known and will be long remembered, generously introduced, at great expense, a stallion of the cart horse breed, of prodigious power, bone and muscle. His brother, Admiral Sir Isaac Coffin, at various times, has presented to his native state, Admiral, a bull of the finest short horned breed, a cow of the same race; a Herefordshire bull, Sir Isaac, of uncommon beauty, and whose stock to my own knowledge have been of rare beauty of form; a stud horse of the Yorkshire race, and a mare of the same breed. For these repeated acts of public spirit this Society could do no less than to present to each of these brothers, rivals in good works, their gold medal of fifty dollars.

Gen. Coffin, with the same untiring zeal for the interests of his native country, has purchased three rams and three ewes of the Devonshire Nots, a race of long woolled sheep closely allied to the improved Leicesters. One of these sheep was sheared at a year old on his passage, and gave 13 pounds of long and fine wool. They are as valuable for their meat as for food, the quarters weighing from

30 to 40 pounds per quarter, and, as it is said, of an excellent quality for the table.

The trustees will endeavour so to place these sheep, as that the beneficent object of the donor shall be carried into full effect. General Coffin, not content with purchasing them, at an age above three score years and ten, has followed them, during their long passage to New-Brunswick, and thence, without delay, from Eastport to Boston, in order, that they might grace the show of this society on this anniversary. He is now present at our festival.

There is no feeling stronger, than that of an attachment to the country in which we are born.—Time and distance have no effect, unless it be in making the feeling more intense. I know of no case, more touching, none in which the strength of that natural feeling has been more strongly exemplified, than in that of these two brothers, who separated from their country in youth, engaged in the service of a nation, now foreign to us, look back with a kind, affectionate and devoted attachment, to the country of their birth. This family (it is probably well known to you all) were among the earliest settlers of Nantucket, an island, which has done more than any other spot, to raise the reputation of our nation, for hardy enterprise, and unblemished morals.

Shall I receive a single dissentient vote, when I propose the thanks of this assembled body of full blooded yankees, to General Coffin, and his brother, Admiral Sir Isaac Coffin.

[The above motion being put to vote, was carried by a show of hands from every person present.]

REPORT II.

The Committee on Milch Cows, Heifers, &c. at the Show of the Massachusetts Agricultural Society, at Brighton, Oct. 17, consisting of Messrs. JOHN WELLES, THOMAS WILLIAMS *of Noddle's Island, and* JOHN MEARS *of Dorchester, Report:*

That they could have wished more fully to have perceived that whilst the face of the country every where presents the marks of improvement in our stock, whilst the zeal of our farmers is awakened and their judgment displayed by a recurrence to the imported breeds as well as the most careful selection of our native cattle, the pens at our annual cattle show might have afforded, as relates to the dairy, to those who honoured the day and its exhibitions, at least more multiplied instances of those improvements that have been effected. This is due to the liberal encouragement of the government to the efforts of the society, and to the deep interest which should be taken in what has such intimate relation to the staples of the country. The committee trust, that the good sense of those, whose character is thus at stake, may be relied on, to give at their own holiday, such an increasing display, as the country can make, and is alike due to their own character, and to the many visitors, whose opinions are often founded on the appearance of the annual show of the Massachusetts Agricultural Society. It will be seen however, that there were not wanting many very fine and productive milch animals, as well as beautiful heifers not only amongst those offered for premium, but those for exhibition also.

MILCH COWS.

The premiums on milch cows, your committee award as follows:

To Oliver Shed, of Weston, for his cow, of native stock, the first premium, $30 00

From the milk of this cow there was made, from June 11th, to Oct. 11th, inclusive, from eight to eleven pounds of butter per week, viz. June and July, over ten pounds; August and September, to Oct. 11th, nearly nine pounds per week. This was supposed to be a native cow of fair appearance.

To James Robbins, of Watertown, the second premium for his cow, of native stock, $20 00

From the milk of this cow, in May and June, there was made from ten to thirteen pounds of butter, and nearly eleven pounds on an average. Also of fair appearance.

To John Meriam, of Concord, the third premium, for his native cow, $15 00

It appears that this cow had given for some time, ten quarts at a milking; and held out (it was said) well. Her milk had been made into butter but a short time, and then gave ten and a half pounds per week. This cow was small, but well proportioned.

MILCH HEIFERS.

For the best milch heifer, the committee award the first premium to J. W. Watson, of Princeton, $15 00

This heifer was of the Holderness breed. Mr. W. states, she came in, in May last, and her calf weighed on the 16th of June, when killed, 23½ pounds a quarter. For several weeks following, she gave 23 to 24 quarts of milk a day, and made ten and a half pounds of butter a week. In Sept. her milk was again kept separate, and she gave 16 quarts a day, and made 7¾ pounds of butter a week. She had no other than pasture feed.

To Aaron Pike, of Milton, the second premium for a milch heifer, $10 00

This heifer came in at a disadvantage, in the opinion of the committee, being only 18 months old, she was proba-

bly, in part, of the imported breeds, of good appearance, and the animal was thought under all circumstances, thus entitled.

HEIFERS.

For the best heifer, not having had a calf, the committee, award the 1st premium to H. Sprague of Spencer, $12 00

For his heifer 2½ years old. This was ¾ Holderness, and of fine appearance.

To J. W. Watson of Princeton, the committee award the 2d premium, $10

This was of the Holderness breed, and of good promise.

To John Ellis of Brighton, the committee award the 3d premium, $8

This was a fine Heifer ½ Holderness, 3 years old.

To Aaron Willard, jun. of Boston, the committee award the 4th premium, $6

This animal was but about 8 months old, and could hardly be considered more than a calf being still with a cow. But the committee thought few animals have appeared at the cattle show of more promise. Mr. Willard states that the heifer was from his imported Durham cow; sired by the bull of John M'Intire of Needham, which received the second premium in 1824.

Amongst the animals entered for premium several were thought worthy of notice.

Richard Richardson of Ashby had a cow which calved on the 7th of January; the calf was in high order in March, and then marketed—another was put to the cow and disposed of in June; these brought about $15. A third was at her side excessively fat, for which he had refused $25. This is a rare instance of product, and there can be no doubt of the value of the animal.

Nathan Adams of Medford entered a cow for premium

also—this was of the "Fill Pail" breed, of good figure, promise and milch properties—but there was a deficiency of statement in those several particulars which could have entitled her to a premium.

Doctor Benjamin Austin also entered a cow which had a fine calf of the Coelebs breed at her side—but as to this and several other animals the committee had no particular representation, those who had them in charge being drawn away perhaps by the ploughing match or other spectacles of the day.

The committee thus close the detail of these observations, made requisite on the distribution of the prizes. Should they in any case be supposed to have erred in judgment, they can only say that in all instances they have been of one opinion.

It would be an ill return for the zeal and meritorious exertions of those who presented fine animals for exhibition, only, not to notice those instances which were conspicuous and gave interest to the show.

Mr. Parsons exhibited his productive Alderney cow, with a full blood yearling. Mr. Seaverns a strongly marked heifer of the same breed. Mr. Z. Cook of Dorchester exhibited a cow and beautiful calf of the Bakewell breed crossed by Coelebs. There were several other promising heifers from Holderness, Coelebs and Denton.

Mr. Mears exhibited a heifer, a cross of Holderness and Coelebs on the Bakewell Breed, 17 months old, a fine figure, which weighed 780 lbs. Mr. Welles exhibited 2 heifers of the Herefordshire breed, (Sir Isaac) a cow and 4 heifers from Denton, and several cows and heifers from Holderness and Coelebs.

The committee repeat that the want of greater fullness in display did injustice to the condition and capacity of the country. But this it is in the power of our Farmers to correct. They will not suffer the apprehension to prevail that they are indifferent to the fruits of their own ex-

ertions—that no useful competition can be excited, or that any well advised efforts for the encouragement of agriculture can be unavailing.

All which is submitted

By order of the Committee,

JOHN WELLES, *Chairman.*

REPORT III.

The Committee on the Ploughing Match with one yoke of Oxen, consisting of E. HERSEY DERBY, JOSIAH TITCOMB, *Esqrs. and Deacon* ELIJAH COREY, *Report:*

There were sixteen entries for ploughing, ten only of which could be accommodated with Lots, which were laid out thirty rods each.

Most of the ploughs were of the improved kind with cast iron mould boards.

The ploughing was to be five inches deep, and the furrows not more than ten inches in width.

Fifty minutes were allowed for the performance of the work.

The shortest time taken was thirty-eight minutes, and the longest fifty-seven.

The Competitors were requested not to hurry their cattle, as the goodness of the work, together with the good management of the Ploughmen, and the general appearance and tractability of the Oxen were to be the principal criterions in awarding the Premiums.

The Committee state with pleasure that most of the ploughing was of the first order. That done by A. A. Wheeler of Concord, would have entitled him to one of the first premiums, had the work been completed within the time allowed.

They award as follows:

1st premium to Joseph Barrett, of Concord	$15
Same as ploughman	8
Same as driver	4
	$27
2d do. to George M. Barrett of Concord	$10
Same as ploughman	5
The driver	3
	$18
3d do. to Samuel Hoar, of Lincoln	$6
Same as ploughman	3
The driver	2
	$11

E. HERSEY DERBY, *Chairman.*

REPORT IV.

The Committee on Agricultural Inventions, &c. report as follows, viz.

Messrs. Jackson and Wright presented for premium, in behalf of Mr. Charles Reed, of East Bridgewater, the inventor, a machine for hammering stone; to be worked either by hand, horse, or water power; a certificate was produced, stating, that with four picks or hammers applied to the machine, it hammered and finished handsomely in two hours and a half, a stone measuring on the surface five feet two inches in length, and one foot in width; the depth of stone picked before the finish, averaged three quarters of an inch; the finish was made by applying to the machine two finishers or smoothing pickers—a stone was also produced and shown the committee, which was hammered and finished by the machine, and the work well executed. The committee thought great credit was due to Mr. Reed for his invention, but think the usefulness of

this machine in its present form, has not been sufficiently proved by experiment, and do not recommend a premium.

Mr. J. R. Newell, of the Agricultural Establishment in Boston, presented for premium, in behalf of Mr. Russell Burke, an improved Side-hill-plough. The committee took some pains to test the improvement in this plough, and had a number of furrows turned with it; they could not but notice the ease and despatch with which the mould board was shifted at the end of the furrow, and was of opinion it would answer for many kinds of level grounds; with its present mould board it is calculated to turn up and leave the soil very light, and with a little variation in the mould board, it might answer equally well for sward land; it is simple in construction, and not easily put out of order. The committee considered it such an improvement on the southern side-hill-plough, (one of which is now in the hall of the society) that they recommend a premium of twelve dollars to be paid to Mr. Newell for Mr. Russell Burke.

Mr. J. R. Newell also presented for premium, Mr. Howard's self-governing plough, which is regulated by a wheel at the end of a bar attached to the beam of the plough, and projecting horizontally, and may be easily fitted to the beam of any plough. A single furrow is first struck out in which the wheel is to run, the width of the furrow is given by adjusting the wheel on the bar. The committee saw a number of furrows turned, and the plough went the length of the furrows without being touched by the ploughman or driver; it appeared to answer the description given by Mr. Howard, who produced a certificate signed by twelve persons in Hingham, in which they state that the plough has been used in their presence, and answers the purpose of conducting and regulating itself in such manner as set forth by Mr. Howard, and renders a ploughman unnecessary, except to adjust the wheel, enter the plough in the ground, and turn it when at the end of the furrow, the same person can do all that is required of

a driver. The committee were of opinion it would not answer for stony land, or where the surface is very irregular; they however consider Mr. Howard entitled to a premium for the inventions, and recommend the sum of twelve dollars to be paid him.

Mr. John Mears, of Dorchester, presented for premium an improvement made by him, in the manner of ironing an ox yoke, also a shackle applicable to the draft chain. Mr. Mears handed the committee the following specification. "The improvement of the yoke, other than has been presented to a former committee of the society, consists in the band encircling the beam, with the ring passing through an eye at the under-part of the band, and firmly secured to it; instead of the staple passing through the beam, thereby weakening the part on which the greatest strain is brought, the staple operating as a pry or lever to split the yoke, whereas the band being secured with screws on the top of the yoke has a tendency to prevent splitting in any direction; it may also be adjusted to the strength or other circumstances of either ox, by turning the nuts and slipping the band towards either end of the yoke." Of the shackle, Mr. Mears said it was for chain draft, to connect the oxen to the plough or other instrument, at such distance as is thought most proper; by passing the pin through any link of the chain. It preserves the links of the chain from injury by doubling through the ring of the yoke, it drops the chain from the yoke, and thereby gives a correct line of draft from the plough to all the leading cattle, instead of hooking to the staple as is the common practice; it prevents the yoke from being twitched forward by every irregularity of movement in the leading cattle; it facilitates their travelling and makes it more easy for the ploughman in directing the plough. The committee thought it would be an improvement if the small round bolt that passes through the ends of the shackle, was made of an oval form, it could then pass

through the links of the smallest chains used for draft, and the strength not be diminished,—for the improvement in the manner of ironing the yoke, and for the shackle, they recommend a premium to Mr. Mears, of ten dollars.

Mr. Mears also presented for premium, a Scythe-case, for the safe transportation of scythes to and from the salt marsh or fresh meadows lying distant from home; it was a box in which six or eight scythes with the rifles, could be easily and readily packed, and in such manner as to render them secure from doing or suffering harm; it was simple and convenient for the purpose mentioned by Mr. Mears, but the committee do not recommend a premium.

A newly invented Lamp-taper and wick, a Pruning-saw set in a small frame with a socket, in which a pole was secured, the top of the frame was made sharp for the purpose of cutting the twigs or suckers by an upward or downward motion—and an improvement in securing the Crane-neck hoe plates to the shanks were severally offered for premium. Some ingenuity, and skill in the workmanship was evident, but the committee did not think them entitled to a premium.

Mr. J. R. Newell presented for exhibition a number of articles that attracted attention, and gave evidence of great improvement in many of the agricultural implements. The committee felt great satisfaction in examining his new invented Corn-sheller. Howard's double mould board plough which was much improved by the addition of a coulter, and an alteration in the shape of the share to which the coulter was secured, his self-sharpening plough, a hand garden plough, Darby's patent boxes for carriage wheels, Gault's and Crosby's patent churns, and Bailey's improved hand corn mill. And they hope Mr. Newell will be fully remunerated for any trouble or expense incurred, by an increased application at his Agricultural Store, not only for such articles as were exhibited

by him, but for any other useful agricultural or horticultural implements.

GORHAM PARSONS.
DANIEL TREADWELL.
Oct. 17, 1827. DAVID MOODY.

REPORT V.

The Committee on Manufactures award to

Slater & Howard of Dudley, for the best Broad Cloths, (blue and black) the first premium, $20

To the same for their Drab Cloth, 2d premium, 15

Slater & Howard, for the best Cassimere, first premium, 12

Bemis Watertown Factory, for the best satinett, the first premium, 8

Sylvanus Holbrook, of Northbridge, for the second best, the 2d premium, 5

Richard Jaques, of Newbury, for the best household woollen cloth, the first premium, 12

Jedediah Wood, of Marlboro', for the second best do. the second premium, 8

Mrs. Stephen Fales, of New Braintree, for the best blankets, the first premium, 6

Lucy Bancroft, of Pepperel, for the next best, the second premium, 4

Frances Foster, of New Braintree, for the best flannel, the first premium, 10

George M. Barrett, of Concord, for the next best, the second premium, 7

Mrs. John Hunter, for linen sheeting, the second premium, 4

B. C. Perkins, of Becket, for linen diaper, the second premium, 5

Richard Jaques, of Newbury, for the best carpeting, (household) the first premium, 15

Lydia Foster, of New Braintree, for the next best, (household,) $7

GRATUITIES.

Harriet Gilbert, of Norton, for a hearth rug, $3
Emerline Patterson, of Boston, for a lace cap, 1
Maria L. Prouty, of Boston, for do. 1
Abigail E. Clough, of Boston, for a lace veil, 2
Mary Hyler, of Boston, for do. 1
Augusta Delano, of Kingston, for a cotton counterpane, 2
Rebecca W. Brooks, of Lincoln, for fine worsted hose, 2
To the Medway Manufacturing Company for hearth rugs, 3
Hannah H. Wheeler, of Grafton, for do. 3
Mary Fisher, of Westboro', for straw bonnets, 2
Louisa Brigham, of Marlboro', for specimens of painting on velvet, 3
Sarah Tappan, of Roxbury, for woollen hose, 2
Miss Heath, of Roxbury, for a muslin mantle and lace veil, 4
Pamela H. Allen, of Bridgewater, for lace work, 2
Harriet Allen, of do. for lace trimmings, 2
Emeline Allen, of do. for a black lace veil, 2
Miss Childs, of Roxbury, for do. 1
To a young lady, of Salem, for a bead belt, 2
To a child, twelve years of age, for a vandyke, of silk weed, 1
Fanny Penniman, of Boston, for a hearth rug, 2
Elizabeth Sherman, of East Sudbury, for a specimen of artificial flowers, 2

Among the numerous articles of manufacture offered for exhibition only, the committee noticed specimens of beautiful lace from the Ipswich Factory. The factory prices were affixed to them, which were lower than the prices of imported lace of the same quality. There were two pieces of cotton duck, from the Bemis Watertown Factory, of very substantial fabric. This kind of duck

has been for some time in use, and is highly approved. The carpeting from the Medway Factory, an imitation of the Kiderminster, was of an excellent quality; the patterns were well chosen, and the colours bright and in good taste. This branch of manufacture has obtained a firm footing, and is rapidly extending itself in this country. Among the various specimens of household industry, the patch work carpet, by Miss Bates, of Weymouth; and a bed quilt of the same fabric, by another lady, were much commended, as works of patient industry.

The articles of fancy work were numerous—such as specimens of lace work, ornamental painting on velvet, and fabrics of the Turkey Down, &c. The Committee having selected those among them which they considered the best, to receive the amount usually awarded in gratuities, are happy to bear testimony to the ingenuity, skill and taste discovered in many of them, which they did not feel authorised to compliment by an award of money.

Mr. Munroe of Concord, whose writing and drawing pencils have been noticed in former years, for their good appearance and cheapness, offered a large assortment the present year, and among them a specimen of the *self pointing* pencils. The Committee had no opportunity to make such a trial of them as to test their quality.

R. SULLIVAN,
SAMUEL APPLETON,
EDW. TUCKERMAN,
JOHN LEMIST. } *Committee.*

REPORT VI.

The Committee on Merino Sheep, and Swine, consisting of JOHN HEARD, Jr. SAMUEL JAQUES, Jr. Esq. *of Charlestown, and* Mr. WM. STONE, *of South Boston,* Report,

That the Merino sheep offered for premium this year, were fewer in number, and more inferior in quality, than

those in former years; and which they attribute in a great degree to the encouragement that has been given for the increase. The flocks having become too numerous to be supported on the valuable land near the metropolis, have been driven into the interior, and so remote that gentlemen cannot or do not exhibit them at the Brighton show. That they have increased in number, and in fineness of fleece almost without a parallel, since their first introduction into this country, is certainly true; many of our hills bear evident marks of the fact, and if the premiums alone are an inadequate inducement,—patriotism, public spirit, and a desire to promote the best interest of their country, should prompt gentlemen to contribute their share of the gratification of the visitors of the cattle show; and induce others to imitate their laudable example.

In deciding the premiums for Merino sheep, the committee were governed principally by the fineness of the fleece; but they did not totally disregard the form and appearance of the animal.—They had more difficulty in determining, whether they should award any premium, than to whom to award it; and after some consultation and consideration, they have awarded to

Joseph Barrett, the second premium for a Merino ram, $10 00

There was no ram of so superior a quality as to be entitled to the first premium.

The Merino ewes, presented for premium, were examined with great care and attention, by the committee, in hopes that they might find a requisite number of sufficient fineness of fleece to award one of the premiums; but having a regard to their duty and responsibility, and the regulations of the society, they could not discover any that were entitled to either of the premiums, for they believed, that as good, and better Merino ewes were not uncommon.

They have awarded to Oliver Tilton, for the best sow, the first premium of $12 00

To George Everett, for the next best, the second premium, $8 00

To Jacob Melvin, for the next best, the third premium, $5 00

To Silas Dudley, for the best boar, the first premium, $12 00

To Joseph Dudley, for the next best, the second premium, $8 00

The third premium was not awarded.

To Oliver Tilton, for the best pigs, not less than two in number, nor less than four nor more than eight months old, the first premium, $10 00

There were none offered, that the committee considered entitled to the second premium.

The committee regret that they have not been able to make a more satisfactory report, upon the most important and useful stock of the farmer;—and hope that the "untiring zeal" of their fellow countryman, Gen. Coffin, to promote the best interests of his native land, and which has been so justly and deservedly noticed by the President of this society, may stimulate our brethren in the country, to more active exertions to improve their stock, and excite in them a spirit of emulation to excel at their annual exhibition.

The chairman of this report cannot close it, without first stating, that in deciding upon the premiums that were to be awarded, he requested the gentlemen, who were associated with him, and who are so generally and justly distinguished for their knowledge, experience and sound judgment, in the estimation of stock, to examine and decide the premiums by themselves, if they could agree, believing, that their decision must in that event give universal satisfaction, and that the gentlemen perfectly coincided in opinion, and were united in the premiums that are above stated. JOHN HEARD, Jr. *Chairman.*

Oct. 17, 1827.

REPORT VII.

The Committee on working oxen, having attended to the duties of their appointment, Report,

That seventeen yokes of oxen were entered for premiums, and of these, fourteen have been subjected to the examination of your Committee. Their strength and docility have been severely tested—The attention which seems to have been paid by all the competitors, to the selection, matching and training their oxen, bears honorable testimony to the interest which is taken in this important branch of our annual exhibition. After duly considering the claims of the respective owners, as it regards strength, docility, form and equality of match, your Committee have unanimously agreed to award the Society's premiums as follows—

To Luther Whiting of Sutton, for his 4 years old oxen, the first premium of $25

To Charles Clark of Framingham, for his yoke of 5 years old oxen, the second premium of 20

To Col. John Bigelow of Sherburn, for his yoke of 4 years old oxen, the second premium of 15

To Hiram White of Sutton, for his yoke of 4 years old oxen, the fourth premium of 12

To Silas Dudley of Sutton, for his yoke of 5 years old oxen, the fifth premium of 8

All which is respectfully submitted.

By order of the Committee,

E. PHINNEY, *Chairman.*

Brighton, Oct. 17, 1817.

The Committee on Agricultural Experiments, have carefully examined the communications received by the Secretary, since their report in October last, from the several competitors for premiums offered by the Trustees; and ask leave to submit for their consideration the following additional report, to wit.

That Mr. Nathan Grout, of Sherburne, in the county of Middlesex, is entitled to the premium of twenty dollars, for having raised, the present year, the greatest quantity of barley, being fifty-four bushels on an acre. Mr. Grout in his communication states as follows. "The soil is a dark rich loam, quite level, and naturally moist—in 1826, it was planted with Indian corn; about twenty loads of barn yard manure were in part spread over the land, and the residue put into the hills; the corn was hoed three times, and produced about forty bushels. Last spring it was ploughed as early as the ground would permit. There were then eight loads of barn yard manure spread upon the acre, and ploughed in. This ploughing was about eight or nine inches deep, being considerably deeper than I have been in the habit of ploughing my lands—it was then ploughed the third time with a horse plough. About 52 quarts of seed were sown upon the furrows, and harrowed in; it was harvested in July, and the product was 54 bushels of well cleaned, sound barley.—The quantity of seed was less than is usually sowed; but I am of the opinion that the crop would not have been increased by an additional quantity of seed. I attribute this unusual crop, in some considerable degree, to the pains that were taken to prepare the land in the best manner; and I am fully convinced that farmers in general would promote their interest, by bestowing more labour in preparing their tillage land for crops. The expense of cultivation, estimating labour at seventy-five cents per day, amounted to twenty dollars and sixty-one cents." Mr. Richard Adams,

Jr. of Newbury, exhibited satisfactory evidence of his having raised the present year, fifty bushels of barley on an acre.

That Payson Williams, Esq. of Fitzburgh, in the county of Worcester, is entitled to the premium of twenty dollars, for having raised the greatest quantity of potatoes on one acre; being five hundred and eighty-two bushels. Mr. Williams' statement is as follows: "As a claimant for your premium for the greatest quantity of potatoes produced from one acre the current year, I would state that my crop of 582 bushels of potatoes on the acre was grown the present season, on the same field which produced 559 bushels to the acre in 1826; as a statement of that crop, mode of culture, and kind of soil, was then before you, and can now be referred to, it will therefore be unnecessary to enter into such detail at this time.—The first part of last May forty-four cart loads of unfermented manure, principally from the sheep fold, were evenly spread, and immediately ploughed in, nine inches in depth, my practice for the last five years. The ground was then furrowed each way about three feet apart, and five cuttings placed at the intersections of the furrows, which were shallow. The quantity of seed was forty bushels, mostly the reds of La Plata. The planting was finished the 15th of May; the weeding was performed with the horse harrow, and hand hoe, so soon as the plants were about one inch above the ground. The second and last dressing was performed by furrowing between the rows each way, with the horse plough, and dressing down the hills with a hand hoe; at this time the vines were nine inches high, and beginning to bud—as the vines in a short time from the last hoeing, covered the ground, no other attention was necessary excepting occasionally pulling a few scattering weeds, till the crop was harvested, which was completed about the middle of October.—The expense of culture, estimating labour at sixty cents per day, and including the value

of the manure used, was fifty-four dollars and sixty cents." Mr. Leonard Hill, of East Bridgewater, raised the present year, on one acre and eight rods, 545 bushels of potatoes. Your Committee regret there not being a second premium offered by the Trustees, for the greatest quantity of potatoes over 500 bushels to the acre; they would most cheerfully have awarded the same to Mr. Hill, as a remuneration, in part, for his very laudable exertions.

Mr. Nathaniel Holden, of Shirley, in the county of Middlesex, raised 98 bushels of Indian corn, on one acre. The following is Mr. Holden's statement: "The quality of the land is a yellow loam. In 1826, about two thirds of the land was cultivated with Indian corn in rows, and manured at the rate of 20 loads to the acre, and the crop was large. In the autumn, in addition to this piece of land, one third of an acre of grass ground was ploughed, making in the whole one acre. In the spring of 1827, I split the hills, and carried on twelve cart loads of barn manure, spread and cross ploughed the whole, the ground was then furrowed by turning two back furrows about two feet apart; a space of four feet was then left for the plough to pass. In these furrows were put seventeen cart loads of manure, consisting of meadow mud, barn yard, hog yard, and green manure. It was planted about the 20th day of May. Four kernels of corn were put in the hills about twenty inches apart, taking care not to have the hills opposite to each other. The seed was the Brighton twelve rowed yellow corn; it was three times ploughed and hoed; the corn was harvested about the middle of October, and spread on a corn chamber floor, it was weighed the 13th day of December; the whole weight found to be 7351 lbs. At this time 71½ lbs. of ears made one bushel of shelled corn, making in the whole 102 bushels 3 pecks and 1 quart of shelled corn, weighing 58 lbs. to the bushel. The expense of cultivation, including the value of the manure, was twenty-seven dollars and eighty cents." The Trus-

tees having determined, as will be seen by their list of premiums published in January of the last year to consider seventy-five pounds of corn and cob as equivalent to one bushel of shelled corn, the quantity raised by Mr. Holden was only 98 bushels and 1-75 part of a bushel; and of course not entitled to the Society's premium.

Mr. Josiah Bass of Quincy, raised the past season, thirty-one bushels and one peck of winter rye, weighing fifty-nine pounds to the bushel, on one acre and thirty rods. And Mr. John Boynton, of Somerset, in the county of Bristol, raised 57½ bushels of oats on one acre and sixteen rods.—No premium has hitherto been offered by the Trustees for the raising of oats.

No claims were exhibited to your Committee for the premiums offered for the greatest quantity of wheat raised on one acre; nor for the greatest quantity of millet, carrots, beets, parsnips, mangel wurtzel, ruta baga, turnips, onions, cabbages, peas, and beans—nor for the greatest quantity of vegetables (grain, peas and beans excepted) raised for winter consumption, and not for sale—nor for the most effectual mode of extirpating the worm that attacks the locust tree—nor for a mode, hitherto unknown, to extirpate the borer that attacks the apple tree, which shall appear to the Trustees to be effectual, and cheaper than any mode now in use. The best mode for rearing, feeding, and fattening neat cattle—the utility, and comparative value of cobs of Indian corn, when used with or without the grain itself, ground or broken—nor for the greatest quantity of butter and cheese, made between the 15th day of May, and the 1st day of October, from not less than four cows; the quantity of butter and cheese and the number of cows to be taken into consideration. The past season having been so uncommonly propitious to vegetation, strong hopes were entertained by your Committee, that our brother farmers would by their experi-

ments in agriculture, have made more numerous claims for the premiums offered by the Trustees. All which is respectfully submitted.

By order of the Committee,

THOS. L. WINTHROP, *Chairman.*

Boston, Jan. 12th, 1828.

THE CULTURE OF SILK.

In a former number, we expressed very fully our views on this subject. We are happy to perceive that the subject has excited the attention, not only of congress, but of almost every state in the union. The expectation that the United States will in a few years be able to raise and produce its own silk, is in our opinion not visionary. Every part of our country, from Massachusetts to the extreme west, is well adapted to the growth of the mulberry tree. That the worm, which furnishes this material, will flourish in Massachusetts is settled by the best of all tests, experience. That the character and density of our population, and the habits of our females, who must be the chief agents in its production, are favourable to its successful cultivation, there can be no doubt. Although our extensive cotton manufactories employ a great number of our females, yet it is as true, that seven eighths of them can yet be spared to the raising of the silk worm ; an employment, well adapted to their domestic character and habits. To produce this effect, it is only necessary that the more intelligent and better educated farmers in each town should set the example. It would not be advisable that this should be done on a great scale, so as to interfere with the general business of the farm. The mulberry once sown or planted requires no attention on the part of the male portion of the public. Young females, and chil-

dren from six years of age, are competent to gather the leaves and to tend the worms. Neither do we think that the attempt to manufacture the silk in private families will be economical. No manufacture requires more than this the division of labour. For the raiser of the silk worm the most profitable course would be to sell the cocoons, and as soon as a sufficient number of them shall be brought to market, there can be no doubt that purchasers will be found at a remunerating price. The congress of the United States have lately published a report of Mr. Secretary Rush, comprising a manual on the subject of producing silk, embracing every part of the process, from the rearing of the worm and its peculiar and specific food, to the perfection of the manufacture in all its beautiful forms and varieties.

We have received three copies of this work from our own representatives, the Hon. Messrs. Gorham, Bailey, and Everett. The limits of our publication will not permit us to publish it at large, but we recommend to the editor of the New England Farmer to publish the *whole*, by slow degrees, without interfering with the other objects of that valuable journal. The number of copies at the disposal of our own members of congress is too small to circulate the information as speedily and as extensively as may be desirable. We shall select for our present number the historical part, giving a brief but very interesting account of the history of the production of silk in other countries, as well as the efforts heretofore made to introduce the culture into *our own* country. We shall prefix the report of the committee of congress on this subject to our extracts. Justice requires us to say, that the public are greatly indebted to Mr. Secretary Rush for the indefatigable and judicious manner in which he has performed the duty required of him by congress.

HOUSE OF REPRESENTATIVES, MAY 2, 1826.

Mr. Van Rensselaer, from the Committee on Agriculture, to which the subject had been referred, made the following Report:

The Committee on Agriculture, to whom was referred the resolution of Mr. Miner, to enquire whether the cultivation of the mulberry tree and the breeding of silk worms, for the purpose of producing silk, be a subject worthy of Legislative attention; and should they think it to be so, that they obtain such information as may be in their power respecting the kind of mulberry most preferred, the best soil, climate, and mode of cultivation, the probable value of the culture, taking into view the capital employed, the labour and the product, together with such facts and opinions as they may think useful and proper; report:

That they have examined the subject attentively, and have taken such steps as they thought best calculated to obtain information which might be useful, and lead to satisfactory conclusions.

The facts developed in the course of their enquiries, tend to place the subject in an important point of view. It is an interesting fact, that the mulberry tree grows indigenously throughout the United States, and that silk may be raised with facility from the southern to the northern boundary of the union. Formerly, considerable quantities of silk were produced in Georgia. In 1766, more than twenty thousand pounds of cocoons were exported from thence to England. The production of the article was suspended, not from any difficulty experienced in the process, but from causes connected with the Revolution. Measures have recently been adopted at Savannah with a view to the renewal of the cultivation of the mulberry tree and breeding the silk worm. In Kentucky, the committee learn that sewing silk is now produced in considerable quantities, and of excellent quality. Many years ago the

attention of public spirited individuals in Pennsylvania was turned to the production of silk. The Persian mulberry was introduced into Bethlehem, Pennsylvania, by Bishop Ettwein, where it flourished, and still flourishes. Silk was produced without difficulty. In Chester and other of the southern counties of that state, the experiment was also made with success. The great demand and high price of bread stuffs, owing to the wars growing out of the French revolution, rendered the cultivation of grain so profitable for many years, that the mulberry was neglected. In 1779 two hundred pounds of sewing silk were made in the town of Mansfield, in Connecticut; and in 1810, according to the report of the marshal who took the census, the value of silk produced in Windham county was estimated at $27,373. The committee learn that the production of silk is still attended to and found profitable. Some beautiful specimens of sewing silk, the production of that state, have been exhibited to the committee. Of the fact, therefore, that the United States can produce silk for its own consumption, and even for exportation to the extent of foreign demand, there appears no reason to doubt. There are few persons, the committee believe, even the most intelligent of our citizens, (who have not turned their attention particularly to the subject,) who will not be surprised at the view presented by the following official statement of the value of silks imported into the United States the last five years:

Statement of the value of silk goods imported and exported in the years 1821 *to* 1825, *inclusive.*

Years.	Imported.	Exported.
1821	$4,486,924	$1,057,233
1822	6,480,928	1,016,262
1823	6,713,771	1,512,449
1824	7,203,344	1,816,325
1825	10,271,527	2,565,742
	$35,156,494	$7,968,011

What a bounty is paid by us to support the agriculturist and manufacturer of other nations, on articles which our country, with a few years of care, might supply! How important it is that the agriculturist should turn his attention to new objects of production, is very fully shown by the circumstance of the diminished and diminishing demand of bread stuffs abroad.

In 1817, the exports of bread stuffs amounted to	$20,374,000
In 1818, - - - - -	15,388,000
In 1824, - - - - -	6,799,246
In 1825, - - - - -	5,417,997

An importation of ten millions of dollars of silks; an export of five millions of bread stuffs! The facts speak the importance of the subject, and indicate the necessity that exists of awakening the slumbering agricultural resources of our country, by introducing new and profitable articles of production. Knowledge is power in agriculture no less than in politics; information is capital and the means of valuable improvement. The committee conceive that the first and most important measure to be taken is to acquire and circulate clear, distinct and precise information on these points: the relative value of the cultivation of the mulberry, and the production of silk, compared with other agricultural productions in the different sections of the union, capital and labour being considered. The kind of mulberry best suited to the object; the most advantageous mode of cultivation; the most approved manner of managing the silk worm, and an explanation of the process till the article is ready for market. The committee incline to the opinion that the best mode of raising silk will be for every farmer and planter to appropriate a small portion of ground, as for a fruit orchard, for raising the mulberry tree, calculating to produce as many worms as his own family will enable him to manage without increas-

ing his expenses, and without permitting it, until the experiment shall have been fully tried, to interfere with the regular course of his usual pursuits. A single acre planted with the mulberry will produce from 500 to 600 pounds raw silk, the value of which to the individual would richly compensate for the capital and labour employed, and the aggregate to the country be of great importance.

The fact is worthy of notice, that, notwithstanding the high price of land in Ireland, where a year's rent of land exceeds the price of the soil in many parts of our country, yet so valuable is the mulberry considered, that importations of trees from the Mediterranean have been made during the last year, for the purpose of producing silk. Your committee addressed inquiries to several intelligent gentlemen who were presumed competent to give them information upon the subject; and among the papers received in reply, they beg leave to present to the particular attention of the house a valuable memoir, replete with interesting facts and useful information, from Edmund C. Genet, Esq., and also several communications from other gentlemen, to whose attention the committee acknowledge their obligations. As the result of these inquiries, believing that knowledge on the subject is of the first importance, the committee submit the following resolution:

Resolved, That the secretary of the treasury cause to be prepared a well-digested manual, containing the best practical information that can be collected on the growth and manufacture of silk, adapted to the different parts of the union, containing such facts and observations in relation to the growth and manufacture of silk in other countries as may be useful, and that the same be laid before congress at the commencement of their next session.

HOUSE OF REPRESENTATIVES, FEBRUARY 11, 1828.

Mr. Van Rensselaer, from the Committee on Agriculture, to which the subject had been referred, made the following Report:

The committee on agriculture, to which was referred the report of the secretary of the treasury, made in pursuance of a resolution of the house of representatives, passed the eleventh of May 1826, directing the secretary to prepare a well-digested manual on the growth and manufacture of silk, have agreed to the following resolution, which they have instructed their chairman to submit to the house:

Resolved, That six thousand copies of said manual and report be printed for the use of the house.

HISTORY OF SILK.

The silk-worm, or, more properly, the silk-caterpillar, is a native of China. The people resident in the northern part of that country, called Seres, having been expelled by the Huns, in the ninety-third year of the Christian era, settled in Little Bucharia,* and were, for many centuries, the sole cultivators of the precious article, with which they supplied the rest of the world. The earliest mention of silk is in the translation of the Bible by Jerome, who enumerates it among the numerous articles, which were imported from Syria by the Phœnicians, those spirited merchants, and skilful manufacturers, who, although seated in a barren and narrow country, confined on one side by the sea, and by a range of mountains on the other, became a great naval and commercial power, which, for a very long period, secured to them a monopoly of trade by sea, and

* The identity of Bucharia with the country of the Seres, is established from the description of it by Ammianus Marcellinus, a writer of credit in the third century.

rendered their "merchants princes, and their traffickers the honourable of the earth."* The singular lustre and beauty of silk, and the delicate structure of the fabric, could not fail to prove highly attractive to mankind: and hence it constituted one of the articles which were brought from China by traders, who, in caravans, performed long and toilsome journeys through the trackless sands and deserts of Asia, to the different ports of Syria and Egypt, which successively became the depôts of commerce. For a long time, two hundred and forty-three days were consumed in these expeditions. Cosmas, himself a trader, speaks of the distance between China and Persia, as requiring one hundred and fifty days to perform the route. The cities of Turfan and Cashgar, were the rendezvous of these caravans.†

The Seres themselves never left home, being "a gentle race who shunned mankind."

The distance whence the article was brought, and the small quantities with which the world was supplied, necessarily caused the price to be far beyond the reach of any but the rich; and even when the Roman power extended over half the globe, as then known, this brilliant and ornamental article of dress was scarcely known to them. It is probable, that they first became acquainted with its real nature from the writings of Dionysius Periegetes, the geographer, who had been sent by Augustus to compile an account of the oriental regions, and who informed his countrymen that precious garments were manufactured by the Seres, from threads finer than those of the spider.‡ Among all the articles of elegance belonging to the luxurious Cleopatra, none seemed to excite their admi-

* Isaiah 23, 8.

† Ptolemy speaks of Comedæ, (the present Cashgar) as the "receptaculum eorum qui ad Seres negotii causa profisciuntur, penes Imaum Montis." Asia, tab: vii.

‡ Periegetes de situ orbis, 6 v, p. 752.

ration and astonishment, as the silk sails of her pleasure-barge, in which she visited them at Alexandria. For a long time after, it continued to be so scarce and dear, that, in the Roman dominions, it was confined to women of fortune. It was moreover deemed so effeminate an article, as to be unfit for the dress of men; and, in the reign of Tiberius, a law was passed, "that no man should dishonour himself by wearing silken garments."* Two hundred years subsequent to this date, the use of it constituted one of the many opprobrious charges which were made against the character of the Emperor Elagabulus. Even fifty years after, another emperor† refused his queen a garment of silk, by the reason of the high price it bore—its weight in gold.

For centuries, the Persians enjoyed a monopoly of the trade in silk, but, after they were subdued by Alexander, (300 years before Christ,) this valuable commodity was brought to Greece, and thence sent to Rome. The anxiety of the luxurious people of that nation, to trade with those from which the costly article was to be procured, induced the Emperor Marcus Antoninus to send Ambassadors to negotiate a more direct commercial intercourse with their country, than the subjects of Rome had yet been able to accomplish; and as the jealousy of the Parthians and Persians prevented the passage of all foreigners through their kingdoms to China, the Ambassadors were obliged to proceed by the tedious way of Egypt and India. Another was sent in the year 272, which led to more favourable arrangements, and a shorter route, viz: along the ranges of mountains, now called Hindookho, and Çuttore.‡ But the price of silk, for a long time, continued a source of regret,

* Ne Vestis Serica viros fœdaret. Tacitus, book 2d, chap. 33.

† Aurelian. Vopiscus in vitam Aureliani, c. 45, libra enim auri tunc libra serici fuit.

‡ See Rennel's map of the countries between the Ganges and the Caspian Sea.

and the article an object of increasing desire among the wealthy. Justinian made another attempt, shortly after he ascended the throne, to obtain it. He sent Julian as his Ambassador to the Christian King of Axuma, in Abyssinia, requesting, that, for the sake of their common religion, he would assist him in a war with Persia, and direct his subjects to purchase silks in India, in order to sell them to the Romans, whereby the Axumites would acquire great wealth, and the Romans would have the satisfaction of paying their gold into the hands of their friends, instead of enriching their Persian enemies. Julian also urged the Homerites in Arabia Felix, then under the vassalage of Axuma, to the same effect; and promised, on the part of the Emperor, to purchase silk from them, if, with their assistance, he could wrest the silk trade from the Persians, and they become the medium of intercourse with the country of the Seres. The Kings of both the countries promised to comply with the Emperor's request; but neither were able or willing to fulfil their engagements. The alleged causes for their non-compliance, were, some internal commotions among the Homerites, and the recall of Belisarius, who, with an army, to which the Arabian auxiliary troops were joined, protected the East from the invasions of the Persians.* This nation, by having the command of the land carriage from the country of the Seres, still enjoyed almost a monopoly, with respect to the western world, of Indian commodities; but more especially silk, with which it supplied remote nations at extravagant prices. From this distress, which was felt and lamented as a real misfortune, by the Senators of the Roman empire, they were released in a very extraordinary and unexpected manner. The preachers of the Nestorian doctrine, having been exiled by the persecuting spirit of the ecclesiastical government of Byzantium, fled to India. Their

* Procopius, p. 34.

patriarch, who resided in Persia, sent missions, and every where established convents and bishoprics. Two of his monks, who had been employed as missionaries in some of the Christian churches, which were established in different parts of India, having penetrated into the country of the Seres, had observed the labours of the silk worms, and become acquainted with the art of working their production into a variety of elegant fabrics. Aware of the anxiety of the Europeans on this subject, they repaired to Constantinople, and imparted to the Emperor Justinian the secret which had hitherto been so well preserved by the Seres, that Silk was produced by a species of worms, the eggs of which might be transported with safety, and propagated in his dominions. By the promise of a great reward, they were induced to return, and brought away a quantity of the silk worm's eggs, in the hollow of a cane, and conveyed them safely to Constantinople, about the year 555. The eggs were hatched in the proper season by the warmth of a manure heap, the worms were fed with the leaves of the mulberry tree, and their race propagated under the direction of the monks.* The insects, thus happily produced from this caneful of eggs, as if the little ark of the insect race, were the progenitors of all the silk worms of Europe, and the western parts of Asia. Vast numbers of these insects were soon reared in different parts of Greece, particularly in the Peloponnesus. The monks having also made themselves masters of the art of manufacturing silk, the business was conducted under the auspices of the Emperor, and for his exclusive benefit: but the imperial monopoly could not long continue, and mankind gradually became possessed of the precious insects, after the death of Justinian, in the year 565.† The people of the Peninsula, and of the cities of Athens and

* The monks procured the eggs from the colony of the Seres, in Little Bucharia.

† Procopius de Bello Gothico, lib. 12, cap. 17.

Thebes, enjoyed the profit of the culture and manufacture of silk without a European rival, for upwards of 400 years; and the Venetians, during the continuance of their commercial glory, distributed the products of their industry over the western parts of Europe. At length, Roger, the Norman King of Sicily, after his return from the second crusade, in order to anticipate an attack, which the Government of Byzantium was preparing against him, and to revenge the insult of the imprisonment of his Ambassadors, whom he sent to form a treaty and a matrimonial alliance with the Emperor Comnenus, made war upon Greece, in the year 1146, with a powerful naval and military force. Corcyra, the present Corfu, first yielded to the arms of the invaders, and the surrender of the other cities of Greece, and all the Morea, followed in speedy succession. The spoils were great; but what peculiarly distinguished this war from most others, which have no consequence than the exaltation of one individual, the depression of another, and the misery of thousands, was the capture of a great number of silk weavers, who were carried off, and settled in Palermo, the capital city of the conqueror. By the order of the King, the Grecian prisoners taught his Sicilian subjects to raise and feed silk worms, and to weave all the varieties of silk stuffs; and so well did they profit by the lessons of their instructors, that, in the course of twenty years, the silk manufacturers of Sicily were subjects of notice and of praise, by the historians of the age.*

The Saracens had, before this time, obtained the knowledge of the various operations of the silk manufacture, and spread it over their widely extended dominions. Lisbon and Almeria, the two Saracen cities of Spain, were especially famous for their silk fabrics; and the island of Majorca and Ivica paid their tribute to the Kings of Arra-

* Muratori Scriptor, Veter. vi. col. 668—Macpherson's Annals, vol. 1, p. 322.

gon in silks. The Italian States soon after engaged in the silk culture and manufacture; and, in the year 1306, this business was so far advanced, as to yield a revenue to the State. In France, Louis the XI, and his son Charles the VIII, established a number of Italian workmen at Tours; but it is to Henry IV, that France is indebted, for placing the culture of silk and its manufacture upon a solid basis. Having put an end to the civil wars of the nation, he determined to give every possible encouragement to this important branch of industry, by recommending and enforcing the general planting of mulberry trees, and the rearing of silk worms. The merit of Henry, on this occasion, is increased by the fact, that his views and measures were in direct opposition to the advice of his favourite and wise minister Sully, who held the project in little consideration, as appears by his own memoirs, in which he candidly records the discussions which he had with the King on the subject. In the year 1455, mention is made of a company of silk women in England. In 1504, the manufacture of ribbons, laces, and girdles, was so considerable, as to be protected by a prohibitory statute. In 1561, Queen Elizabeth was presented with a pair of black knit silk stockings, with which she was so well pleased, that she never after wore any of another material. James I. was extremely solicitous to encourage the silk manufacture, and recommended it several times from the throne: and, in the year 1608, addressed a long letter on the subject, written with his own hand, to the Lord Lieutenants of every county in the kingdom, to whom mulberry plants and seeds were sent for distribution. He also had a book of instructions composed, on the rearing of the trees and the culture of silk, to promote the success of his project. The royal wishes do not appear to have been seconded by his subjects; but he had the satisfaction to see the broad silk manufactory introduced in the latter end of his reign. The revocation of the edict of Nantes in the year 1685,

which drove all the Protestants from France, permanently established the business in England; and the erection of the silk throwing mill of Sir Thomas Lombe at Derby, in the year 1719, greatly promoted it, by the rapid preparation of the raw material.

HISTORY OF SILK IN THE UNITED STATES.

The culture of silk first commenced in Virginia. Upon the settlement of that colony, it was deemed an object of the first importance; and the attention of the settlers was strongly directed to it by the British government, by which silk-worm eggs, white mulberry trees, and printed instructions, were sent over and distributed. King James the First, in the 20th year of his reign, having, doubtless, seen the defeat of his plan to encourage the silk culture at home, was induced to attempt it in Virginia; and, "having understood that the soil naturally yieldeth store of excellent mulberries," gave instructions to the Earl of Southampton, to urge the cultivation of silk in the colony, in preference to tobacco, "which brings with it many disorders and inconveniences." In obedience to the command, the Earl wrote an express letter on the subject, to the Governor and Council, in which he desired them to compel the colonists to plant mulberry trees, and also vines. Accordingly, "as early as the year 1623, the colonial assembly directed the planting of mulberry trees; and, in 1656, another act was passed, in which the culture of silk is described as the most profitable commodity for the country; and a penalty of ten pounds of tobacco is imposed upon every planter who should fail to plant, at least, ten mulberry trees for every hundred acres of land in his possession. In the same year a premium of 4,000 pounds

of tobacco* was given to a person as an inducement to remain in the country, and prosecute the trade in silk; and, in the next year, a premium of 10,000 pounds of tobacco was offered to any one who should export £200 worth of the raw material of silk. About the same time, 5,000 pounds of the same article was promised "to any one who should produce 1,000 pounds of wound silk in one year." The act of 1656, coercing the planting of the mulberry trees, was repealed, in the year 1658, but was revived two years after; and the system of rewards and penalties was steadily pursued until the year 1666, when it was determined that all statutory provisions were thereafter unnecessary, as the success of divers persons in the growth of silk and other manufactures "evidently demonstrated how beneficial the same would prove." Three years after, legislative encouragements were revived; but subsequently to the year 1669, the interference of government seems entirely to have ceased.† The renewal of the premiums after the act of the year 1658, was, doubtless, owing to the recommendation of Charles II.: for, in the year 1661, among the instructions given to Sir Wm. Berkeley, upon his reappointment as Governor, and while in England on a visit, the King recommended the cultivation of silk, and mentioned, as an inducement to the colonists to attend to his advice, "that he had formerly worn some of the silk of Virginia, which he found not inferior to that raised in other countries." This remark is probably the ground of the tradition mentioned by Beverly, that the King had worn a robe of Virginia silk at his coronation.‡

* In the early settlement of Virginia, tobacco was the circulating medium, the substitute for money, as sewing silk is, in part, at present in Windham county, Connecticut.

† Henning's Statutes of Virginia, vol. 1 & 2.—Letter to the S eretary of the Treasury in answer to the silk circular, from the Honourable John Tyler, late Governor of Virginia.

‡ Burke's Hist. Virginia, vol. 2, p. 125.

The revived encouragement given by the Colonial Legislature to the culture of silk, had the desired effect. Mulberry trees were generally planted, and the rearing of silk-worms formed a part of the regular business of many of the farmers. Major Walker, a member of the legislature, produced satisfactory evidence of his having 70,000 trees growing in the year 1664, and claimed the premium. Other claims of a like tenor were presented the same session.* The eastern part of the State abounds at present with white mulberry trees; and it is to be hoped, the people will see their interest in renewing the culture of silk.

Upon the settlement of Georgia, in 1732, the culture of silk was also contemplated as a principal object of attention, and lands were granted to settlers upon condition that they planted one hundred white mulberry trees on every ten acres, when cleared; and ten years were allowed for their cultivation. Trees, seed, and the eggs of silk-worms, were sent over by the trustees, to whom the management of the colony was committed. An Episcopal clergyman, and a native of Piedmont, were engaged to instruct the people in the art of rearing the worms and winding the silk. In order to keep alive the idea of the silk culture, and of the views of the Government respecting it, on one side of the public seal was a representation of silk-worms in their various stages, with this appropriate motto, "non sibi sed aliis."† By a manuscript volume of proceedings and accounts of the trustees, to which the writer has had access, it appears that the first parcel of silk which was received by the trustees, was in the year 1735, when eight pounds of raw silk were exported from Savannah to England. It was made into a piece, and presented to the queen.‡

* Burke, vol. 2, p. 241.

† M'Call's History of Georgia, vol. 1, p. 22, 29.

‡ "The trustees of Georgia waited on her majesty with some silk from Georgia, which had proved very good. It is to be wove into a piece for her

From this time, until the year 1750, there are entries of large parcels of raw silk received from Georgia, the produce of cocoons raised by the inhabitants, and bought from them, at established prices, by the agents of the trustees, who had it reeled off under their direction. In the year 1751, a public filature was erected, by order of the trustees. "The exports of silk, from the year 1750 to 1754, inclusive, amounted to $8,880. In the year 1757, one thousand and fifty pounds of raw silk were received at the filature. In the year 1758, this building was consumed by fire, with a quantity of silk, and 7,040 pounds of cocoons; but another was erected. In the year 1759, the colony exported upwards of 10,000 weight of raw silk, which sold two or three shillings higher per pound, than that of any other country."* According to an official statement of William Brown, Controller of the Customs of Savannah, 8,829 pounds of raw silk were exported between the year 1755 and 1772, inclusive.† The last parcel brought for sale to Savannah, was in the year 1790, when upwards of two hundred weight were purchased for exportation, at 18*s*. and 26*s*. per pound.‡

majesty."—Gentlemen's Mag. Vol. 5, p. 448. The following entry appears in the manuscript book of the trustees, under date, 1736: "The raw silk from Georgia, organzined by Sir Thomas Lombe, was made into a piece of silk, and presented to the queen." Under date 1738, is a charge "for making a rich brocade, and dying the silk from Georgia, 26*l*."

* M'Call's Hist. Georgia, vol. 1, p. 251.

† It will be seen that this statement differs from that of Mr. M'Call. It first appeared in B. Roman's account of Florida, and afterwards in Aikin's Pennsylvania Magazine, for July 1775. An opinion of the quality of the Georgia silk, may be formed from the following document:

"A paper was laid before the Commissioners for Trade and Plantations, by about forty eminent silk throwsters and weavers, declaring, that, having examined a parcel of about 300 pounds weight of Georgia raw silk, imported in February last, they found the nature and texture of it truly good, the colour beautiful, the thread even, and clean as the best Piedmont, and will be worked with less waste than China silk."—London Magazine for 1755.

‡ The late Charles Harris, Esq.: letter to the Secretary of the Treasury.

Some attention was also paid, in early times, to the culture of silk in South Carolina; and the writer has been informed, that, during a certain period, it was a fashionable occupation. The ladies sent the raw silk produced by them to England, and had it manufactured. "In the year 1755, Mrs. Pinckney, the same lady who, about ten years before, had introduced the indigo plant into South Carolina, took with her to England a quantity of excellent silk, which she had raised and spun in the vicinity of Charleston, sufficient to make three complete dresses: one of them was presented to the princess dowager of Wales, and another to Lord Chesterfield. They were allowed to be equal to any silk ever imported. The third dress, now (1809) in Charleston, in the possession of her daughter, Mrs. Horry, is remarkable for its beauty, firmness, and strength."* The quantity of raw silk exported as merchandise was small; for, during six years, only 251 lbs. were entered at the custom-house.† The quality of it was excellent: according to the certificate of Sir Thomas Lombe, the eminent silk manufacturer, it had as much strength and beauty as the silk of Italy.‡ At New Bordeaux, a French settlement, 70 miles above Augusta, the people supplied much of the high country with sewing silk, during the war of the Revolution.§

In the year 1771, the cultivation of silk began in Pennsylvania and New Jersey, and continued with spirit for several years. The subject had been frequently mentioned in the American Philosophical Society, as one of those useful designs which it was proper for them to promote; but they were induced to enter into a final resolution on it, in consequence of a letter being laid before them on the

* Ramsay's History of South Carolina, vol. 1, p. 221.

† Viz.: in the years 1742, 1748, 1749, 1750, 1753, 1755.—Dodsley's Annual Register, 1761.

‡ An Impartial Enquiry into the State of Georgia.—London, 1741, p. 79.

§ Thomas McCall, Esquire: answer to the silk circular.

5th January 1770, from Doctor Franklin, who was then in London as Agent of the Colony, and in answer to one which had been written to him on the same subject by the late Doctor Cadwallader Evans. In this letter from Dr. Franklin, he recommended the culture of silk to his countrymen, and advised the establishment of a public filature in Philadelphia, for winding the cocoons. He also sent to the Society a copy of the work by the Abbe Sauvage, on the rearing of silk worms. A committee having been appointed by the Society to frame a plan for promoting the culture of silk, and to prepare an address to the Legislature, praying for public encouragement of the design, they proposed to raise a fund, by subscription, for the purchase of cocoons, to establish a filature, and to offer for public sale all the silk purchased and wound off at the filature; the produce thereof to be duly accounted for, and to remain in the stock for carrying on the design. A subscription among the citizens was immediately set on foot, and the sum of £875 14*s.* obtained the first year;* eggs and white mulberry trees were imported, and a digest of instructions composed, published and distributed. Until the white mulberry trees were fit to allow of their leaves being plucked, the worms were fed upon the leaves from the native trees, and were found to agree perfectly well with them, and to yield excellent silk. It is believed that all the silk produced during the continuance of the Society, was from food furnished by native trees. A spirit for the silk culture was excited among the citizens, and

* The loss of the minutes of the Society prevents our knowing the amount subscribed in subsequent years. It is a proof of the anxiety of the British Government, in respect to the silk culture in the Colonies, that, in the year 1769, an act was passed for the '*further*' encouragement of the growth of silk in North America, granting 25*l.* for every 100*l.* value of raw silk raised for the next seven years, and smaller bounties during the two following periods of seven years. But no mention is made of this act by Dr. Franklin in his letter, nor does it appear that any premium was claimed by the Society in consequence of it.

many garments are still possessed by families which were made from silk raised by their forefathers. The war of the Revolution put an end to the patriotic association, and suspended, in a great measure, the silk culture—there being no longer a sale for cocoons; but many persons continued their attention to it, and others resumed it after the termination of the war.

The knowledge of the proper mode of rearing silk worms, and of winding the silk, was greatly promoted by the publication of a paper on those subjects, in the 2d volume of Transactions of the American Philosophical Society of Philadelphia, which the late Doctor John Morgan procured from Italy, through a silk mercantile house in London.* During the last three years, a spirit has been revived and diffused on the subject, and promises to increase; and there can be no hesitation in saying, that a ready sale for cocoons is alone wanting, to establish the silk culture as a regular employment in several States of the Union. It was the want of this market which defeated, in a great degree, the patriotic attempt of Mr. Nathaniel Aspinwall, of Connecticut, about the year 1790, to revive the silk culture in Pennsylvania, New-York, and New Jersey. But his memory deserves to be held in everlasting and grateful remembrance, for the thousands of white mulberry trees which he planted in those States, and for the commendable zeal he exhibited in the cause.

In Connecticut, attention to the culture of silk commenced about the year 1760, by the introduction of the white mulberry tree, and eggs of the silk worms, into the county of Windham, and town of Mansfield, from Long Island, New-York, by Mr. N. Aspinwall, who had there planted a large nursery. He also planted an extensive nursery of the trees in New Haven, and was active in ob-

* This excellent paper has been copied in all the British and Scotch Encyclopædias, and was reprinted in a pamphlet, at Windham, Connecticut, in the year 1792.

taining of the Legislature of Connecticut, an act granting a bounty for planting trees; a measure in which he was warmly supported by the patriotic and learned Dr. Ezra Styles. The premium was ten shillings for every hundred trees which should be planted and preserved in a thrifty condition, for three years; and three pence per ounce for all raw silk, which the owners of trees should produce from cocoons of their own raising within the State. After the public encouragement for raising trees was found unnecessary, a small bounty on raw silk, manufactured within the State, was continued some time longer. A statute continues in force, requiring sewing silk to consist of twenty threads, each two yards long.*

It would be an act of injustice to omit noticing the generous encouragement to the cultivation of silk in the American Colonies, which was given by the patriotic Society in London, for "the Promotion of Arts," &c. From the year 1755 to 1772, several hundred pounds sterling were paid to various persons in Georgia, South Carolina, and Connecticut, in consequence of premiums offered by the Society, for planting mulberry trees, and for cocoons and raw silk.†

After the war of the Revolution, the business was renewed, and gradually extended; and it is recorded, that, in the year 1789, two hundred pounds weight of raw silk were made in the single town of Mansfield, in Windham, Connecticut.‡ In the year 1810, the value of the sewing silk and raw silk, made in the three counties of New London, Windham, and Tolland, was estimated, by the United States' Marshal, at $28,503;§ but the value of the domes-

* Governor's Wolcot's answer to the silk circular.

† The particulars are not inserted in the transactions of the society, but may be seen in Bayley's Advancement of the Arts, London, 1772, and in Dossie's Memoirs of Agriculture, vol. 3.

‡ Columbian Magazine, Philadelphia, 4, p. 61.

§ Statement of the arts and manufactures of the United States for the year 1810. By Tench Coxe.

tic fabrics made from the refuse silk, and worn in those counties, was not taken into consideration. They may be fairly estimated at half of the above sum. In the year 1825, enquiries were made by the writer, in Windham county, as to the increased attention to the silk culture there, and it was found that the value of the silk, and of the domestic fabrics manufactured in that county, was double that of the year 1810. It was also found, that sewing silk was part of the circulating medium, and that it was readily exchanged at the stores for other articles, upon terms which were satisfactory to both parties, and that the balance of the account, when in favour of the seller, was paid in silver. The only machines for making the sewing silk, are the common domestic small and large wheels, but practice supplies the defects of these imperfect implements; with better machinery, sewing silk of a superior quality would be made. At present, "three-fourths of the families in Mansfield are engaged in raising silk, and make, annually, from 5 to 10, 20 and 50 pounds in a family, and one or two have made, each, 100 pounds in a season. It is believed that there are annually made in Mansfield, and the vicinity, from three to four tons."*

The farmers consider the amount received for their sewing silk as so much clear gain, as the business does not interfere with the regular farm work of the men, or the domestic duties of the females, upon whom, with the aged and youthful members of the family, the care of the worms, and the making of the sewing silk chiefly devolves. It is known, also, that, in the other New England States, Maine excepted, more or less attention to the silk culture is given.

During the late war with England, Samuel Chidsey, of Cayuga county, New-York, sold sewing silk to the amount

* Z. Storrs, Esq. of Mansfield: answer to the silk circular.

of $600 a year. Mr. C. introduced the white mulberry tree in the town of Scipio, on its first settlement.* Silk was, also, formerly raised by the French inhabitants, in the country now the State of Illinois, but to what extent is not known.†

The cultivation of silk has commenced in the States of Ohio and Kentucky, and there is every reason to believe that it will extend. The first mentioned State contains a great number of citizens who formerly resided in the silk-growing districts of Connecticut and Massachusetts, and who will doubtless see their interest in renewing a branch of business, from which they formerly derived so much profit. In the latter State, it is chiefly confined to those industrious people, the United Brethren, whose steady, persevering labours and intelligence are the surest guaranties of success.

RAW POTATOES BAD FOR MILCH COWS.

The following article taken from a foreign Magazine, has been copied lately into the American Farmer and the New England Farmer.

"Many farmers are in the habit of giving raw potatoes to all kinds of stock; but they are of a watery and griping nature, and accidents have frequently happened from their use before the cattle have been accustomed to them. For milch cows they are very bad, purging them, and rendering their milk too thin and poor, even for suckling. If given raw to fatten oxen, good hay and bean meal should be allowed to counteract the watery quality of the roots. There is, however, much difference in the

* Mr. David Thomas: letter in answer to the silk circular.

† Governor Coles: letter in answer to do.

nature of potatoes, and the mealy approach nearest to the nature of corn, the yellow afford the strongest nutriment." —*Scotch Magazine.*

Nothing can be of greater importance to every farmer, than a correct knowledge of the comparative merits of the different varieties of food for his cattle. Of course nothing can be more pernicious, than throwing out loose and general censures of any particular species of food, particularly of those most easily raised, and therefore the cheapest. I certainly am not disposed to set up my authority against opinions advanced in established works. But there is no treason in stating facts, in relating careful and long continued experiments. For nearly twenty years, I have been in the practice of allowing my milch cows from November till they go to grass about three pecks of roots a day with good English, or upland hay to their full content. I first commence with the beet, because it is most perishable; carrots then follow, and from February till May, they have raw potatoes. In commencing with the potatoes, they will be for a few days relaxed; so they will, often, to as great a degree, with Indian meal; after a little use, they return to their natural state of body, and are always in high condition when they are turned out to grass; perhaps they are too fat.

Potatoes, then, cannot be a watery griping food; my milk is as rich as the milk of cows not thus managed. My cows have been almost always raised by myself, from my own stock, and I usually keep them till they are aged. If the proposition stated in the extract at the head of these remarks had been true, or nearly true, or had any degree of soundness in it, it seems to me impossible, that I should never have remarked the ill effects stated.

Some farmers may consider these remarks as of less weight, as coming from a man not bred a farmer. Some may suppose that I trust the eyes of others, and am deceived. To these possible objections, I reply, that my

cows are objects of special regard, as furnishing me with one of the most valuable luxuries; that I attend to them personally and carefully, and I can see no good reason why an attention of 20 years should not enable me to form as correct an opinion as a thorough bred farmer. I am not, however, without support from persons of that description. An intelligent practical farmer, whose dairy is in such repute that he obtains from 31 to 37 cents a pound for his butter, assured me, that he always gave his cows in winter the long red potatoe in a raw state, and that he estimated two bushels of that potatoe for his cows as equal to one bushel of corn.

JOHN LOWELL.

ONE OF THE DISEASES OF THE PEACH TREE.

A DISEASE has this year reappeared in my peach trees, which must be very familiar to every cultivator of that tree. About the latter end of May, the leaves, or many of them, are covered with blotches of a yellow and reddish colour.

These leaves after a few days fall, and where the leaves of any tree are generally so affected, the fruit ceases to grow, and falls also. This is not a new disease: when I was a youth, more than 40 years since, the peach trees were, for many successive years, so affected. The disease however afterwards disappeared for several years. When I took possession of the estate I now occupy, about 22 years since, all my peach trees became affected with this complaint, and so fatal was it, that from 1806 to 1820, I never had a tolerable crop of this delicious fruit. In all the former visitations of this disease, it was generally attributed to cold blasting easterly winds and storms; by

some it was ascribed to a diseased state of the fluids, men always preferring to trace analogies between the animal and vegetable kingdoms, rather than to seek with care the more natural and simple causes. After the discovery of the worm at the root, now ascertained by Professor Say to be the larva of an insect, which he has called "ægeria exitiosa" or the destructive ægeria, I supposed that this might be the cause. On its reappearance this year on my trees, I was resolved, if possible, to detect the cause of the disease. As an approximation to it, I first attempted to settle my opinion by negative proofs. I sought to discover what could not be the causes of the disease. I soon satisfied myself, that it could not be occasioned by blighting cold winds or storms. My reasons were, that these occur in every season, yet I have not seen a blotched or diseased leaf on my trees for seven years, before the present year. The effect of cold winds and storms, would equally affect every tree and every leaf; but I found that some trees, under equally great exposure, as delicate and even more so, were entirely free from disease; and on all the trees, many leaves were perfectly healthy. I remarked that old trees which were feeble were more affected, than the strong and vigorous. The most delicate shoots often escaped wholly; I was therefore satisfied that it could not be owing to the season.

I examined to ascertain, whether the worm at the root could be the cause. I found no worms at the roots of any of the trees, having for several years past annually destroyed them.

Could it be general ill health? The trees were in all other respects in the most healthy condition. The same objections applied to this supposed cause as to the first.

I then resorted to the most natural cause; the most common, the cause, whose effects, in other trees most nearly correspond with these appearances, the bite of an

insect. The bites of insects produce an almost infinite variety of appearances. The aphis on the peach tree curls both the leaf and the stalk in a very remarkable manner. I searched the diseased leaves but could perceive no insect. There is no larva within the diseased and blotched leaves. Might they not however, seek these leaves for their own food, and not as a nidus, or nest for their young? Certainly they might, for so does the aphis. On pursuing my investigation, I discovered clearly and unquestionably the cause. The insect is found, sometimes one, two, and often ten, in the *unexpanded* leaves when they are about one inch long. The leaf is then folded back so as to conceal and protect the *future upper surface*. On the mid rib of this leaf, and *there only*, will be found a small insect or insects, of a *very light* green colour, without wings, with 6 feet on the breast or thorax only, the abdomen ribbed. Being no entomologist, I describe only what I clearly saw. It is an exceedingly active insect. It must quit the leaf when it expands, as it is never found on an expanded one. It probably goes from the more advanced to the tender leaves as the aphis certainly does. I could see nothing to lead me to believe, that there are constantly increasing generations of this insect as in the aphis, and in the scourge of our vines. Unhappily its secure situation affords us no remedy by external application. In *young trees*, and early in the season, the careful cultivator might do something by removing the diseased leaves, before they expand, and thus check the future progress of the insect.

J. LOWELL.

Roxbury, May 31, 1828.

June 2d. Postcript. Since writing the above, I beg leave to say, that I have since found the insect on the fully expanded leaves to the number of ten or more. I think it may be worth inquiry whether the removal of the

diseased leaves from the ground may not be of use in checking the insect another year. The last fall, I removed several peach trees from the nursery, and planted them out. The trees in the nursery are filled with insects, *those removed* to other ground, not affected. This would look as if the ground was the winter residence of these insects. They are so small that many persons might overlook them, without the aid of magnifying glasses. Yet they are so numerous and so active, as to be quite competent to the work of destruction, which we perceive.

REVIEW.

Nature and Reason Harmonized in the Practice of Husbandry. By the late JOHN LORAIN. *With an Alphabetical Index.* Philadelphia: H. C. Cary and Lea. 1825.

ALTHOUGH this work has been before the public several years, and has been extensively circulated, and extracts made from it in various publications, yet no regular notice has been taken of it in any periodical publication. The professed literary and scientific reviewers probably have thought, that agriculture is either beneath or beyond the sphere of their publications. This is not extraordinary; for until within a few years there have been no readers among the agricultural class. They have themselves done much to discourage persons, who felt disposed to enlighten them, as to the progress of their art in other countries, and even in their own. Deane, and Bordley, and Taylor, have had few readers among the practical farmers, except the educated men in the southern states. More recently, farmers have been willing to read, and some of them even solicitous to obtain the Journals of the Massachusetts Agricultural Society. But still the progress was very slow,

until Mr. Skinner of Baltimore, with a boldness and energy which entitles him to the public gratitude, undertook to publish a weekly paper, devoted to agriculture principally. His merited success proved that agricultural information was in truth a desideratum; that there was an effective demand for it, and that the failure of the more formal and formidable works on agriculture was owing to other causes than the want of interest in the subject. The expense of the books (oftentimes,) the parade of learning, the too great disposition to theorize, the unfortunate introduction of methods of culture, which were tried and failed, the too credulous character of the writers who inserted from European authorities processes, either not adapted to our climate or not suited to the habits of our farmers; these causes, combined with the stubborn resolution not to be instructed by educated men, have impeded the circulation of the few treatises which have been published in our country. The establishment of the New England Farmer under the auspices of Mr. Fessenden, at the same time an educated man, and from his infancy familiar with the practice of agriculture, well acquainted with the sciences connected with that art, and modest, unassuming and candid, has wrought a great change in public sentiment; and the enquiry for and sale of works devoted to agriculture and horticulture, afford the most unequivocal proofs that farmers no longer disdain to seek the light and information which other countries and other states of our own can throw upon their art.

Of the works which have appeared in our country of American origin, that of Mr. Lorain unquestionably stands at the head. It is not only more original, contains more new thoughts, but it is much more extensive, and embraces a greater variety of topics than any other American work. We could wish that we had a more intimate knowledge of Mr. Lorain's history, not because the real merit of his work would be affected by it, but because his influence

and the weight of his opinions with the public would be much greater, if we had the means of showing what his opportunities of information were.

We can, therefore, only state what we gather from his work. That he was originally a slaveholder, and therefore conversant with the modes of cultivation in the states in which that species of labour is employed; that from Maryland he removed to Pennsylvania, and cultivated a farm not far from the metropolis, and finally removed to a comparatively new farm in the interior. His opportunities were therefore great, and it will appear in our examination that he did not fail of improving them. It would seem also, that he was intimately acquainted with the European methods of cultivation, whether from visiting Europe (as we presume he did) or not, we cannot say. He was conversant with chemistry and its application to agriculture. Such were his means. From the character of his work, for we have had no personal knowledge of him, we have no hesitation to say that he was a man of strong and powerful sense, capable of expressing his thoughts with great distinctness and force; his style possesses an energy seldom exhibited on such subjects, and in no degree inferior to that of Col. Taylor of Virginia, and of Cobbet. These are his advantages. His disadvantages or defects are, that he had a most invincible disposition to theorize, and like all other theorists he never sees any thing but in the precise light suited to his theory. He is delighted when he can arraign the opinions of Sir Humphrey Davy. He seems to consider *him* a champion worthy of his attack, and that to accomplish a victory over *one* of *his* opinions, is an achievement, which justifies his desertion of the great purposes of his work. Indeed, the very title page of his book puts forth his pretensions to the rank of a *discoverer*. "Nature and Reason Harmonized," necessarily denotes, that all other preceding writers have placed them in opposition or conflict.

There is another fault in Mr. Lorain's work, which is less pardonable than any other. There is an acrimonious spirit, a disposition to injure the character and feelings of other distinguished cultivators, which cannot be readily excused. His incessant sneers at the venerable judge Peters, are proofs of an ungovernable temper or of personal pique. Those who read this work without any knowledge of the character, public services, experience and learning of the President of the Pennsylvania Agricultural Society, would form very unjust and improper impressions of his character. These are great and lamentable defects. There was no occasion for Mr. Lorain to build up his own reputation at the expense of others, and his want of candour necessarily impairs the public confidence in his *own* statements, for when a man is under the operation of strong excitement, you can never feel a confidence that it will not influence even his statement of facts.

In reviewing briefly (as the limits of our present number will compel us to do) Mr. Lorain's work, we shall not take the course adopted in other reviews, where the principal object of the reviewer is to display his own talents. Our course will be to give our readers some insight into Mr. Lorain's work. We shall give a brief synopsis of it, simply adding without much reasoning our own opinion of his theories, whether favourable or unfavourable. To attempt to disprove what we think unsound, or to support what we deem correct, by argument or facts, would require a volume at least as large as his own.

His first book is on the most important of all agricultural subjects, manures and vegetation. His first chapter is on lime in its caustic state, and on the carbonate of lime, limestone, marl, and powdered limestone. This chapter introduces his own peculiar (so far as we know) doctrine of the injurious effects of caustic lime. The whole chapter is devoted to the maintenance of that proposition. The basis of his proposition is, that lime is a stimulating ma-

nure, promoting vegetation, but in doing this it exhausts the soil. But we ask, in what manner? Simply by promoting the decomposition of the animal and vegetable matter in the soil, and by *increasing* the amount of the crops. But if a fair proportion of the produce of these crops is returned to the soil in the shape of the dung of the animals which consume the crop, this effect will not be produced. The great object of the writer seems to be, to bring into disrepute the practice of all the European nations, and of some of the most eminent agriculturists in our own country of using lime in its caustic state. The British farmers, who have limestone at easy command, incur the expense of burning it before they apply it to the soil. This practice Mr. Lorain would seem to condemn; he prefers the powdered limestone uncalcined. His reason for it seems to be, that this resembles more nearly the operations of nature, which distribute the alkaline principle more slowly. He, however, cites no experiments to show, that uncalcined limestone in a pulverized state does in fact produce any important effects. The objection in our minds to this theory (for it is only such) is, that the quantity of uncalcined lime must be much greater, its transport to the farm more expensive, and, we should suppose, the process of reducing it to powder would be more troublesome. He admits that the action of caustic lime is more rapid, and, as we should infer, more useful for the immediate purposes of the farmer. If mixed with the soil and manure it decomposes it more speedily for the benefit of the present crop, and, as to its exhausting character, it can only arise from its producing greater crops. No person ever considered lime as adding materially to the fertility of the soil itself. It is a very different question, whether the application of lime to compost heaps is beneficial or hurtful. This topic Mr. Lorain discusses in another place, and it is a question of very different nature. It may, perhaps, be highly inexpedient to hasten the decom-

position of manure *before* it is applied to the crop, and yet be very useful to employ the same power for the advancement and increased production of an existing crop. The English farmers often apply from 200 to 300 bushels of calcined lime to a single crop of wheat, and they calculate upon a full remuneration from that crop. The effects of that lime they find to endure for seven years. That is to say, they find its effects in hastening the decomposition of manure to last for that period. But no English writer ever dreamt of applying no animal and vegetable manure in the intermediate time. They, therefore, experience no exhaustion.

Mr. Lorain's second chapter on gypsum is principally devoted to the overthrow of Sir Humphrey Davy's solution of the *manner* in which gypsum operates. Its effects are undoubtedly astonishing, and it is not extraordinary that the *cause* of these effects should have engaged the earnest attention of philosophical minds. To the farmer it is indeed unimportant, whether the effect is produced by one cause or another. The early theory was, that gypsum operated *solely* as a stimulant, and not directly as food to the plant. To explain the mode of operation on this principle, the advocates of this hypothesis contended that gypsum hastened the putrefactive process, and rapidly decomposed animal and vegetable substances, and fitted them to be the aliment of plants. The fact which is all that to this hour is *certainly* known, was too well proved to be doubted by *any* theorist. When Sir Humphrey Davy brought his powerful mind and extensive knowledge to this question, he was unable to account for the effects on the received theory. He contended that it was physically by any known laws impossible, that one or even two bushels of gypsum could materially hasten the decomposition of animal and vegetable substances contained in an acre of land. This was the great strong-hold of the advocates for the stimulating system. He began by the truly philosophi-

cal method of ascertaining, whether gypsum possessed the assumed power of acting on animal substances in *any way*. He tried the effects of gypsum on two pieces of veal; the one was covered with gypsum, the other was not treated with it. He actually found that the decomposition was as rapid in the veal *not* submitted to the action of gypsum as in that which was. The same experiment was repeated on pigeons' dung, with the same result. This convinced him that the existing theory was unsound, and it seems to us very difficult to resist the evidence. If caustic lime had thus been applied, we all know that the result would have been the reverse. Sir Humphrey then turned his attention to other causes of the operation of gypsum. He found that gypsum operated only on *certain* plants, while it was wholly inert and inefficient on others. This induced him to analyze the few plants on which gypsum produced its extraordinary effects, and he found that these particular plants yielded an unusual quantity of gypsum. Hence he inferred that these plants required a supply of this compound for their healthy and vigorous production. He was too much of a practical philosopher to go further, and to show *how* these particular plants took up the gypsum. These are secrets of nature, which stop the enquiry of truly sensible minds. But that his conclusion was more philosophical and rational, we think can scarcely be questioned. Mr. Lorain has made, to our minds, but an imperfect attack on this theory. He has suggested that though the gypsum did *not* act in *any* manner on the substances submitted to it, yet he contends that it *may* operate on the earth and manure, where it is combined with moderate moisture and with substances half decomposed already. We admit that there is both force and ingenuity in this suggestion. It is true, that substances in a diluted state will produce effects directly opposite to the effects of the same substances in a more concentrated form. Sir Humphrey Davy says, that salt in very small quantities

hastens decomposition of animal substances, while in greater masses it checks it. Our complaint against Mr. Lorain is, first, that he attacks Judge Peters for holding the opinion, that plaster in *small* quantities accelerated decomposition, while in *larger* proportions it produced not *any effect*. He attacks Sir Humphrey Davy on the *very* ground, which he pronounces to be contradictory and absurd on the part of Judge Peters. That is, he maintains that though Sir Humphrey Davy's experiment on the direct application of plaster to veal failed, yet it might be owing to its great quantity; and yet he denies to Judge Peters the benefit of his own principle. We have been thus minute on this subject, because we think it shows that Mr. Lorain is not in all cases a sure guide; but our own opinion is, that the operation of plaster and indeed of all manures is, as yet, very imperfectly understood; that the science of analysis of all substances is a very distinct one from their *operation* on *animal* and *vegetable life*, and that though investigations of this sort may be amusing to curious minds, yet other cooler and safer intellects will forever recollect, that there are limits to human knowledge which it is not very useful to pass, most certainly on subjects so *practical* as this. Indeed, we are unable to perceive any direct use in ascertaining, whether gypsum operates as a stimulus or as nutritive food. The question to what soils, or to what plants it is usefully applied, is indeed a very interesting question; and before we quit it, we shall repeat what we have often said, that it is a great mistake to suppose that gypsum is not a powerful agent on the sea-coast: on silicious and sandy soils, and all generally light soils, we know from repeated experiments that its effects on clover and lucerne are very great near the sea. We have now a crop of clover on *pure sand* well plastered, which is equal to any crop on the most fertile soils. Shall we be told that it will exhaust it? Exhaust sand? Exhaust what had no fertilizing matter in it? Be it so. A very little

manure will restore it to a state in which the plaster will *again* produce its extraordinary effects.

Mr. Lorain's chapter III. is, in the main, full of rational matter. He reasons in general very philosophically, by which we mean that his reasoning is founded on undoubted *facts*. The general scope of it is to show, that nature furnishes the means of fertility by its own unaided processes; that the growth and decay of vegetable life tend to enrich the soil. His remarks upon the value of weeds is very sound. We should carry the doctrine further than he does. Weeds are destructive of the crops which are useful to man. We call them *weeds* very properly, because they are rejected instinctively by most animals. Yet their use to man is very great. If a farmer found no plants in his cultivated grounds, which were noxious to the plants valuable to himself for his own food, or for that of the profitable domestic animals, he would never put a plough into the earth, or even use a hoe, except for the purpose of putting the seed into the earth. Weeds compel him to stir the ground. By this necessary, and we may add compulsory process, he reduces the earth to a fine tilth, easily permeable to water and dew, and highly favourable to the extension of the delicate terminal fibres of the roots of plants, which, from their delicacy and softness, are best calculated to receive and transmit nutriment. Indeed, the harder parts of the roots probably exert very little influence on the growth of plants other than that of sustaining the plant in its erect position. The rupture of these roots by the plough and the hoe, compels the plant by a law of self-preservation to send out an increased quantity of these tender shoots, which we all know by experience to be highly favourable to the growth of plants. We shall, however, reserve for another occasion, when we shall be compelled to examine some unphilosophical notions of Mr. Lorain on this particular topic, our further views on this subject. We repeat that the general views

presented by Mr. Lorain are in our opinion very sound, though not new. So far as our limited reading has extended, the same ideas have been suggested and the same reasoning applied by almost all writers on this subject. Mr. Lorain has not in this connexion sufficiently exalted the *use* of weeds as a *manure*. The quantity of weeds, in comparison to the crop to be raised, is immense. Although it would not be good policy to suffer the weeds to grow to a size which would render them the most valuable possible addition to the manure, because they would stifle the intended crop, yet it is believed that the amount of vegetable matter turned in by ploughing and hoeing root crops, is much greater than is generally supposed. On the whole, we may safely say that weeds are a most valuable part of the economy of nature, compelling man to do that which is of essential value to his crops, and rewarding him for that labour, not only by directly stimulating the growth of the crop by *mechanical* means, but by adding to the soil substances rapidly decomposable, and furnishing new food to his crops without essentially impairing the strength of his artificial manures. The effects of the operation of the plough and hoe are so obvious to every careless observer, that no man can and happily no man (but the sluggish) *pretends* to doubt it.

In a chapter in which we find so much to commend, it is not a desirable office to be obliged to find fault. Yet as the defects we perceive are connected with the whole work, as they serve to explain some of the singular eccentricities of other and more material parts of it, we feel obliged to take notice of them. We are surprised to find Mr. Lorain attributing to the death of animalculæ, by which he seems to mean obscure insects, such an important agency in adding to the *animal* matter in the soil. It *may* be so, and we are not able to show that it is *not* so, neither was Mr. Lorain able to demonstrate that *it was so*. That beetles, and aphises, and caterpillars, and grasshop-

pers *die*, is unquestionably true, but that the whole race of insects do in fact materially increase the fertility of the soil is not susceptible of proof, and seems to our minds to be a more curious than sound proposition. That they have their use in the economy of nature, no man who sees the wonderful harmony of the universe can doubt. They are the food of birds, and birds add not a little to the mass of animal manure; but these are subjects rather beyond our reach. Insects check very often to an alarming degree vegetable growth, and often destroy vegetable life, and thus contribute to the increase of vegetable manures; but their *direct* agency in increasing animal manures and thus fertilizing the soil, seems to us a very questionable assumption.

He breaks away from the whole subject of his chapter, to attack Sir Joseph Banks's doctrine, "that the mildew in wheat is a fungus." He doubts the *fact*. But the fact is susceptible of proof, and has been proved to be true. Mr. Lorain, however, is not alone in supposing that disease previously existed in the plant, rendering it more favourable to the growth of funguses. This question is one which can never be solved to the satisfaction of *every man*; but there are some means of approximation to the truth. Young trees are often covered with mosses. By removing the moss by alkaline washes the tree recovers its vigour, without changing the treatment of the root, without doing any thing to the soil. It will make more vigorous shoots, and recover its former strength. If you could make a similar application to the stalks of wheat or rye, who can say that their health would not be restored? The grape when young (we mean the fruit) is subject to mildew. The Hon. Richard Sullivan discovered that sulphur would *remove* it (that is, *kill* it) and the bunches of grapes would continue to grow as well as if they had never been attacked. This is *fact*, not theory. The life of the fungus was destroyed; but if the disease had been in the vine itself,

in any *internal* cause, such an effect could not have been produced. The gooseberry is subject to the same disease, in a still greater degree. This year we applied sulphur to the diseased gooseberries, that is, to the berry itself, and it killed the fungus, and the gooseberries became as healthy as before. In all these cases, the application should be made in an *early* stage of the disease. There are several other suggestions in this chapter which we deem as questionable as those which we have mentioned, but the limits of our review will compel us to pass them over at present.

We shall pass over chapters IV. V. and VI. not only because the subjects of them are of very little practical importance, but because to defend the received theories against the fanciful attacks of Mr. Lorain would require a pamphlet as large as a number of this journal. The subjects are the causes of the perpendicular growth of plants; of the ascent of sap; an analogy between animals and vegetables; the denial of the sleep of plants.

On every one of these topics, he is opposed to Sir Humphrey Davy, Knight, Linnæus, and Dr. Hales. He treats them as a set of blockheads for not seeing what was clear to him, that all the phenomena of vegetation are to be ascribed to the "living principle." He seems to consider plants as sentient and almost as voluntary agents. He denies that physical causes are the principal moving principles in vegetable life, and tries to explain the facts on which the theory heretofore received is founded, but to our judgment without the least success. Against Linnæus' doctrine of the sleep of plants, he opposes the fact that he took a light and went into his garden and found all the leaves of his plants in the same state as in day light. He admits clover to be an exception. Did he ever look at lucerne, or the locust, or the three-thorned acacia, all of which surrounded him? We could give him a list of several hundred plants which shut up at evening. A very large

proportion of flowers exhibit the same appearances at night; but these subjects are out of place in our present review, whose object is to present Mr. Lorain's views and practice on the art of agriculture.

Mr. Lorain's VIIth chapter is a very interesting one. His main design is to show that no mixture of simple earths, in any proportions, can make a soil capable of sustaining a luxuriant vegetation without the mixture of animal and vegetable substances. "Even the wonder-working powers of gypsum or plaster have been found insufficient to operate on the inert substratum of a thin soil which has been turned uppermost by trench-ploughing, unless animal and vegetable matter be applied." This important position is indisputably true. Yet a very small amount of animal and vegetable matter is necessary to render both clay, pure clay, and pure sand very productive. Neglected brick yards, where the clay is pure enough to make excellent bricks, by ploughing and manuring for two years only, taking off crops of potatoes each year, have without sand produced luxuriant crops of clover; and if one hundred loads of sand had been carried on to an acre of such lands, they would be fertile for several years. The writer of this review has a piece of ground from which all the humus, or vegetable and animal matter, was removed for certain purposes, and left a body of pure sand, so pure as to be fitted for plastering mortar. It was dunged for potatoes for five years. The crops were small, yet they must have exhausted part of the manure carried on. The sixth year it was laid down with clover and herds' grass without manure, and it has given by the aid of plaster two great and luxuriant crops, and there is every appearance of its enduring another season, as the present crop far exceeds the first. Yet the proposition of Mr. Lorain is true in general, and is admitted to be so by all. Mr. Lorain then proceeds to examine the British practice of paring and burning the soil as a means of improving it. He con-

demns it without qualification, and we must confess that he does it with great force of reasoning, though we should have been better pleased if he had treated Sir Humphrey Davy with more decorum, and if he had tried it himself even on a small scale, and shown us the results not only of the first crop, but of several successive crops. He attributes the apparent beneficial effects of this extraordinary process of British husbandry, not to the efficacy of the ashes so much as to the luxuriant crops of grasses which followed it. His general doctrine is, that grasses enrich the land partly by the shade which they afford while growing, but chiefly by the immense mass of vegetable matter contained in their roots. The judicious and skilful management of these roots in cultivation, seems to be the very first and principal discovery, as he considers it in the process of agriculture. To that more than to any other single thing, he attributes the superiority of his own system; not that he neglects or despises manure; no man thinks higher of it; but the waste of the vegetable matter in the common modes of culture, he deems of more vital importance than any manures a common farm can supply.

To give a view of Mr. Lorain's theory on this subject, we quote the following passages at large, which give at the same time a favourable specimen of his style.

"We may readily make a tolerably correct estimate of the amount of vegetation above the soil, for it is seen. If the earth be carefully removed from a soil of grass cut out sufficiently deep, the number, size, and texture of the roots seem to justify the opinion, that they will weigh as much as the full grown tops proceeding from them, and it would seem that the same may be expected from the roots of the plants generally called weeds. On a lay, well stored either with grass or weeds, any fallow crop that the soil is capable of producing, may be very advantageously grown, and followed by wheat or any other small grain. After these crops have been removed, a considerable proportion of the animal and vegetable matter that was at

first contained in the lay, will remain for the use of the grasses; which ought always to follow the second cultivated crop, when the soil is rather thin, and enriching manure cannot be applied for the first crop.

If a proper system of cultivation be pursued, all the animal and vegetable matter that it seems possible to reclaim from the multiplied avenues of useless waste, will be saved; and if, as in the case now under consideration, the soil happens to be a retentive clay, a much dryer, and vastly more open and freer soil is obtained for the roots of the plants, than can be furnished by paring and burning. When the grass or weed lay is turned, each furrow-slice forms an under drain; especially when the crop of grass or weeds which has been ploughed under is luxuriant.

The innumerable roots that fill the soil in every direction, minutely divide it. The fermentation and decomposition of them and of their tops expand and open it. This with the cavities or holes formed by the gradual decay of the roots, prepare an open, free, artificial bed, well stored with nutriment, and properly calculated to admit the roots of the plants readily to pass through it, in every direction, in search of the food provided for them.

The fermentation that takes place in the soil is never interrupted, or the nutritious matter arising from it exposed to useless waste, as is done by the usual, but very erroneous practice of turning up the sods when the crop is cultivated. Of consequence nothing is lost that could be saved. It is also certain that there is nothing but fire, or some cause which acts with equal effect, that can destroy weeds or any other vegetation injurious to crops, more effectually than fermentation when it is properly directed.

If the lay be well turned and the crop cultivated by the hoe harrow, (called by some a scuffler) with the tined harrow following it, the weeds and grasses are cut off by the first implement a little within the surface of the soil.

The vegetation separated by it from that lying still lower within the ground, is overturned and effectually mangled by the tined harrow. The weeds and grasses within the soil being severely wounded by the hoe harrow, and closely covered by the earth above, the fermentation of them is powerfully promoted every time the fallow crop is cultivated.

Still some hardy plants, and also others which are less hardy, but more favourably situated, will escape. It should, however, be recollected, that even the savage and destructive practice of paring and burning does not entirely extirpate either: also, that fermentation keeps the soil open and mellow, so long as a sufficiency of animal and vegetable matter remains in it. As the small grain is put in by the hoe harrow with the tined harrow following it, the sod is not disturbed either before or after the seed for this is sown. Consequently, the seed of weeds, which lay buried beyond the power of vegetation is not turned up, to poison the crop or the grasses following it.

Neither are the rich matters within the soil exposed to useless waste. I have been compelled prematurely to introduce this very concise description of some of the substantial advantages obtained by a proper cultivation, that the reader may contrast them with the fleeting resources, and ruinous consequences, arising from burning the soil." —pp. 84, 85.

The latter part of this chapter is employed in decrying the importance of carbonic matter, either æriform or in substance, as one of the sources of fertility. He does not seem to deny its power *entirely*, but he attacks the fashionable opinions on that subject with ridicule and with acrimony, and he concludes with the following expressions of self-gratulation. Indeed, if no other man should happen to be pleased, Mr. Lorain had the enviable pleasure of giving entire satisfaction to himself.

"Now, if in all material points the contents of this

and the foregoing chapters be (as I believe they are) correct, it would appear, that although much has been written on the economy of plants, and the nature and properties of manures, but little is well known of either; and that if these subjects be ever 'scientifically explained,' philosophers must retrace their steps, and depend much less on theory, and far more on practice, united with elaborate observation.

If this had been done, charcoal and the gases would not have been rung, until nature was silenced, and reason deafened with the sound. Neither should we have been told, that the 'heart-wood of a tree is dead, and is only useful to elevate and sustain aloft the swarm of biennial plants which cover it.' Nor that 'gravitation disposes the parts of plants to take a uniform direction.' Nor that they 'owe their perpendicular direction to gravity.' Nor that the sap is raised by the agency of heat and capillary attraction, or by 'the expansion and contraction of the silver grain of the wood.' Neither should we have been told, that 'nothing above common matter exists in the vegetable economy.' Nor that 'all the simple leaves of plants had an arrangement at night *totally different* from their arrangement in the day; and that the greater number of them are seen at night closed or folded together.' Nor that gypsum, the alkalies, and various saline substances, are a part of the true food of plants. Nor that the carbonate of lime acts merely by forming an useful earthy ingredient in the soil.

The celebrity of a philosopher whose talents are highly esteemed, may for a time stamp an ideal value even on his errors. Still, those errors would be eventually detected and exposed, if the gentlemen who followed him in writing on the same subject, would examine facts for themselves, as they stand recorded in the great book of nature 'by the pencil of truth,' in place of sitting at ease in their libraries, surrounded by a huge collection of

books, and forming theories of what is said of nature in them."*—p. 98.

Mr. Lorain's VIIIth chapter is on the important subject of preparing manures for their application to the soil. It is true, that no branch of agriculture has experienced a greater change than this, and we may safely add that on none has science, chemical science, done so much to effect a change. This change seems to have been wrought simultaneously, nearly at the same moment in Europe and America. It is difficult to decide, whether Mr. Lorain knew of the change of opinion in England, or whether his own mind brought him to the point which he now maintains. This, however, is *certain*—uncontrovertible—that *we* of *New England* had, most of us, arrived at the same results before we knew that Mr. Lorain existed. His name was unknown to us all five years since, and his work did not reach us till within two years. Some general notions of chemistry had induced many of us to believe, that the thoroughly rotted compost heaps were not only an useless labour, but a great waste of what modern writers considered the *food* of plants. We use a *cant* phrase, which covers human ignorance, because it is in common use. Men, the most learned men, know nothing of the food of plants. All which they know is, the effects of certain applications to the soil in promoting fertility. Theory, however, or rather the science of chemistry led common readers to believe what careful experiments proved, that in the process of fermentation gaseous matters escaped from decomposing materials, which were more essential to plants than perfect humus or soil composed of the products of decayed animal and vegetable substances. Rich, most rich such a soil, produced by compost heaps undoubtedly is, better than any other, because stronger. It was not unnatural,

* 'It is evident, however, that an intimate acquaintance with what is said of nature in those books is highly important, when it is made subservient to practical observation.'

therefore, that cultivators should have adopted the opinion that entirely decomposed animal and vegetable matters were the best possible application to the earth for crops. There was another cause which favoured this universally prevalent opinion. Unfermented vegetable matter carried into the ground immense quantities of the seeds of weeds, and for grain crops it is to *this hour* very questionable, whether perfectly rotten manure is not preferable to undecomposed materials for such crops. As to root crops, and all crops, which are treated with the plough and its auxiliaries, there can be no question. It is rather singular that *one* experiment for centuries before the eyes of horticulturists should not have brought them *at once* to the conviction of the superior efficacy of unfermented manure. We do not know that the suggestion has not been *often* made, but we have never seen it, and therefore we state it, the surprising effect of hot beds. They are made of the most strawy and least decomposed dung in preference. Their effects on vegetation are well known, producing early, rapid, vigorous growth, and premature but delicious fruits. These effects were attributed to *bottom heat* (a cant expression of the gardeners) and partly to the protection of the glass. *Now*, however, the superior fertility, rapid growth, and vigorous health of hot-bed plants is justly ascribed to the gaseous matters which feed both their roots and leaves. The common gardeners, no doubt, contributed very much to the commonly received opinion that thoroughly decomposed earth was most favourable to the growth of all their exotic plants, and from the gardener the opinion spread among the farmers. But Mr. Knight, whose active and intelligent mind has been devoted to the *practical* part of gardening, has proved that it is as true in relation to green-house plants as to crops at large, that unfermented vegetable matter is superior to any compost, however rich. By common sods, in their undecomposed state put into his pots, he has given a young vine

the growth, the astonishing growth of forty-eight feet in one season. So that what a thousand years experience had taught us to believe to be true in the case of hot beds, has been *proved* to be so in relation to plants raised in pots with unfermented matter, having no bottom heat, and deriving no nutriment except from the slow decomposition of vegetable matter.

Mr. Lorain, ever ready to find fault with every body but himself, says, that " the fruitless attempts to make farm yard manure a more proper food for plants, has been a perpetual source of extensive waste and much injurious and expensive labour." This is true. He proceeds to condemn all compost heaps, and he adds, that it is of no service to add good soil to the dung yard; that nothing is gained by it; that we had better apply the dung by itself, and the soil by itself. Now this, in our sober judgment, is carrying opinions generally sound to absurd extremes. Because we all *now* admit, that dung should *not* be piled up in heaps till it is reduced to soil, does it follow as a reasonable conclusion, that the earth from ditches, from road sides, from head lands, should not be brought into the farm yard or pig-sty to be itself enriched by the urine of animals there fed? Is it not an entirely distinct process? No fermentation takes place. The litter and straw cannot take up all the fluid matters of the barn yard, the greater part will filter through litter. Is it of no value to collect earths, of themselves composed of vegetable matter decomposed, and enrich them by what would be otherwise wasted? Mr. Lorain, it is true, in other parts of his work, haltingly admits, that it may be of some use to add to the natural constituent parts of the farm yard, foreign materials, but he doubts whether it would quit the cost. We know of no heresy greater. We know, that two pigs may be made to manure well, and richly, an half acre of ground, by furnishing them with *proper soil* for them to enrich, three fourths of whose liquid manure, would be wast-

ed, without such care. Recollect, that we are agreed about the inexpediency of compost heaps, as usually recommended. But we are not prepared to abandon *all* compost heaps whatever, nor all applications of *lime* to them. It is not the authority of any one man, however able, which can overturn the practical, equally practical experience of millions. Compost heaps, and the application of lime to them, are highly useful for pond mud. When taken from the pond, it is composed of rotten vegetable and animal matter, dead fishes, frogs and other animals, and of the washings of all higher grounds. By the long action of water it is finely divided, but to use a common expression, *cold*. The fact is, that applied directly to crops in any way, it is apparently inert. Treat it with lime, it is an admirable manure on dry soils. This is the result of twenty years' personal experience. Its value is full equal to the same bulk of the best horse or cow dung unfermented. Where lime is applied to unfermented vegetable matter, we are inclined to believe that its effects may be injurious; yet there are cases in which it may be highly beneficial. We had a body of sods fresh dug, which we wished to use as a manure for a crop, to be put in *immediately*. We treated the sods with lime, in a quantity, and for the purpose of killing the plants, but without entirely decomposing them. We have no doubt that this compost, made in fourteen days, will be better than the *sods* applied *alone*, and the lime added *separately*.

Mr. Lorain's ninth chapter, on manures *not in general use*, is so excellent in general that we shall insert it entire, adding a few practical notes.

"As some manures which are not in general use will be found very profitable, where they can be readily procured on moderate terms, I will point them out, and make some observations on them.

There is no part of an animal which does not furnish valuable manure. The parts that quickly decay are not so lasting, but more powerful.

Bones, when reduced under a stone, similar to those used for grinding tanners' bark, are, when broken into pieces, not exceeding a small chestnut in size, an excellent and very lasting manure. Fifty or sixty bushels are applied to the acre. Much less would suffice if they were broken before the grease is boiled out of them for other purposes. Or if they were much finer ground, a great deal less would produce the same immediate effect.

Horn shavings and turnings are still more powerful than bones which have been stripped of decomposable animal matter. Twenty bushels per acre of them, are commonly applied.

Sheep trotters are said to be very valuable, and applied at the rate of forty bushels per acre.

Damaged wool, and the offal trimming from sheep, are also used for manure, from ten to twenty hundred weight to the acre, in proportion as the quality may be more or less valuable.

Woollen rags, cut into small pieces in a paper mill, have been very successfully used at the rate of from fifteen to twenty hundred weight to the acre.

Fish are sometimes caught in large quantities for manure. Twenty bushels to the acre have been used very successfully. Salted fish, after being damaged, have been also very profitably employed for this purpose. So has the brine from sound fish.

Feathers are a valuable manure; when damaged in quantities, they may be profitably applied to this purpose. The farmer should have the feathers that are not used for more profitable purposes, put into his receptacle. Also, the hair scalded from his hogs, &c. This, or hair taken from skins by tanners is valuable. The blood from animals that are killed on the farm, should also be put into the receptacle, for it is a very rich manure.

Furriers' clippings and curriers' shavings are valuable manure; thirty bushels to the acre. The offals from the tan-yard and glue maker are also very valuable.

It seems probable that the clippings and chippings from shoe makers, saddlers, and others working in tanned leather would be valuable manure; but might require some decomposition previously to being ploughed under the soil.

The scum from the boilers of sugar bakers, consists of bullock's blood, and saccharine matter, consequently is a very rich manure.

Fresh oyster or clam shells, when broken into pieces are a very valuable manure; they would, however, be much more useful and powerful, if they were finely powdered.

Where any kind of shell fish is plenty, and may be readily procured, they will be found very valuable manure, if broken into pieces previous to their being ploughed under the soil.

It is said that the corals, coralines and sponges, contain equal parts of decomposable animal matter and lime; therefore, where they can be readily obtained, they may be advantageously used for manure.

Spoiled salted beef, pork, &c. may be formed into a compost with earth. When the latter has imbibed the principal part of the decomposable animal matter, the compost may be removed with as little or less offence than slaughterhouse dung. The brine of sound beef, pork, &c. is also valuable manure.*

When domesticated animals die, it is the common practice to let them rot above the ground. This is sure to annoy the neighbourhood. If the stench from the animal be too distant to contaminate the air, dogs are fond

* The product of wheat has been considerably increased by soaking the seed in fish brine, and rolling it previously to sowing, in dry unleached ashes. The same effect is to be expected from the brine from meat, in proportion to the animal matter contained in it. Brine made of salt, and used in the same way, has been also found to increase the crops of small grain and prevent smut.

of carrion, and after they have gorged themselves with it, become insufferable inmates to the families to which they belong. The dead animal should be laid on a thick layer of earth, and well covered with the same material. After the covering has sunk in, and the earth has absorbed the animal matter, the compost will not be more offensive than slaughterhouse dung, provided a sufficiency of earth has been employed. If such offensive manures be removed regularly, before the season renders them very noxious, the injurious prejudice against working among them will cease. They should be hauled to the field during the winter, and ploughed under so soon as frost will permit. The same should also be done when night soil is used.

Urine is a very valuable manure, and may be readily saved on farms by putting it into the common receptacle.

The manure from privies is very powerful. It is said that five loads to the acre have restored exhausted soils; and two loads per acre, annually applied, has excited and maintained luxuriant vegetation. The interest of agriculture would be greatly promoted by contriving cheap and simple means of saving the manure in cities, villages, and on farms, and of conveying it to the soil with the least possible offence. Quick lime, or other septic substances, should not be employed to effect the ready removal of it.

Sir H. Davy says, 'The Chinese, who have more practical knowledge of the use and application of manures, than any other people, mix their night soil with one-third of its weight of a fat marl, make it into cakes, and dry it by exposure to the sun. Those cakes, we are informed by the French Missionaries, have no disagreeable smell, and form a common article of commerce in the empire.' 'The earth, by its absorbent powers, probably prevents to a certain extent, the action of the moisture on the dung, and likewise defends it from the effects of the air.'*

* See his Lec. on Agr. Chem. page 296.

The experiment seems to be well worth trial; especially as there appears to be but little, if any difficulty in getting the business done. It offers an additional profit to those who clean out necessaries, to be obtained with quite as little, or perhaps less exposure to offence.

How the Chinese save their night soil is unknown to me. If as much moisture be mixed with it as obtains in our privies, much more marl must be used by them.

A pure compact clay will be found better for this purpose than a calcareous marl,* as the latter decomposes animal and vegetable matters.

The agricultural societies organized in our cities, might have this experiment made with but little trouble or expense. To prevent error, some active intelligent member should, in the beginning, superintend the process.

Pigeon dung is a very powerful manure; so is that from farm yard poultry. However, neither the dung nor the fowl will ever pay the farmer one-tenth part of the money they cost him, if he suffers them to pillage his fields and mow in the usual way. They should be confined when damage may be expected from them in the fields, and the grain in the mows should be kept closely covered with straw.

If this, however, be done, and the poultry are not taught to roost regularly in houses provided for them, but little manure will be gathered. Such houses cost but little, if utility in place of parade governs the practice of the cultivator.†

In some places, much valuable manure may be gathered where wild birds roost at night.

Street dirt is an assemblage of substances; some of

* Clay without any calcareous matter in it, is sometimes improperly called marl.

† In England, what is called a complete establishment for poultry, often costs more money than a valuable farm would cost in many parts of this country.

which are mechanical, others enriching, and some stimulating. When too large a proportion of the first does not prevail, it is a very valuable manure.

Sea, river, and pond weeds, from fifteen to twenty loads to the acre, have been used with success.

The weeds growing in our fields may be very profitably used, provided they be ploughed under the soil not less than five inches deep; and a cultivation calculated to keep them there be pursued.

When potatoes, or any other root which can only be gathered by turning up the soil, is planted, the use of weeds should be avoided, unless the soil be sufficiently deep to admit the practice of trench ploughing.

Straw, and some other vegetable substances, may be ploughed under the soil in tolerable quantities when very wet: but as it is difficult under any other circumstances than a partial decomposition, to plough under a sufficiency of this weak manure, to do any very material good to the crops, it is much better to lose some part of it by fermentation, than to injure the round of crops, and grasses following them. Cornstalks, and other bodies equally hard, will require more decomposition than straw, before they can be readily ploughed under the soil in sufficient quantities to answer any very valuable purpose. Where cattle are plenty, every vegetable substance that can be profitably used for litter, should be applied to that purpose, as the rich juices in the cattle yard will increase their value many fold.

Leaves, when raked up through the woods, in the fall and winter, and suffered to remain under the shade of the trees until a great heat takes place in them, become very compact; and but very partially decomposed. In this state, they may be ploughed under the soil, and are a valuable manure.

If the ground, however, be annually raked, the grasses will grow, the soil will become hard, and the timber be

eventually destroyed, as are the trees in our orchards, when the grasses are suffered to take possession of the grounds. Therefore the woods should be laid out so, that one-third part of them only be raked in the course of three years. By this means, the grasses will be kept under, and nature will keep the soil open and mellow for the roots of the trees, by the fermentation of the leaves, and other substances covered by them. The loss of the leaves from this practice will not be any thing like so great as at first sight appears; for the economy of nature is perfect: consequently, the fall of the leaves of the last year is preserved by her, to form a compact covering over those that had fallen before. This not only prevents the growth of the grasses, but also much evaporation from the fermentation of the animal and vegetable matters underneath them.

It has been confidently asserted, that stone coal is an excellent manure; that it has succeeded both in Europe and this country: therefore, I am disposed to believe, under favourable circumstances, it may be so.

I have tried it here by top dressing, without any perceptible effect, on corn, wheat, red clover, and the spear grasses, although the coal was pounded quite fine, and sifted. This may have happened in consequence of the soil being impregnated with some of the properties of the coal, as it frequently appears near the surface throughout the whole neighbourhood: or it might have succeeded, if it had been ploughed under the soil. There is also a great difference in coal; that used by me abounded in sulphur and bitumen, and burned freely.

The ashes from stone coal have been extensively used for manure at from forty to fifty bushels to the acre. So has soot from the same substance, at from twenty-five to forty bushels to the acre; likewise the ashes and soot from wood. Too little care is taken of soot in this coun-

try. The farmer may have that from his own chimneys put into the receptacle.

Little is practically known of peat in this country; but the ashes from it are much used in England for manure. Burning is, however, a destructive practice, and should be avoided whenever it can be done. It is much better to expose the peat to the influence of the atmosphere, until it can be ploughed under the soil.

The great value of chip manure from our wood yards, when it is but very partially decomposed, should teach us the great impropriety of reducing vegetable substances to ashes, when manure is the only object, and when they may be applied without burning. If these chips were reduced by fire, previously to their being applied, the comparative value of them would be trivial indeed. The cause of this is evident: when they are ploughed under the soil, and a cultivation calculated to keep them there is pursued, fermentation and decomposition are promoted, and gradually spread all their exciting and enriching influence through the grounds, with the least possible loss; and ashes stimulate, but do not enrich the soil.

Sir H. Davy says, 'Peat earth, of certain consistence and composition, is an excellent manure, but there are some varieties of peat, which contain so large a quantity of ferruginous matter, as to be absolutely poisonous to plants.'*

This can only happen when the peat is applied in too large quantities; as Sir H. and many other gentlemen have shown, that ferruginous matter is an excellent manure. It is true, that he rather seems disposed to confine the usefulness of it to calcareous soils; in which, he says, it unites with the lime, and gypsum is formed.

Agreeably to this theory, the peats which contain large quantities of ferruginous matter, may be rendered very valuable manure, by mixing them with fresh slaked lime,

* See his Lec. on Agr. Chem. page 6.

previously to their being applied: but as economy is important in the practice of farming it would be far better to spread the lime first over the lay, and after this spread the peat, and turn the whole under. This will place the lime on and among the peat. If the ground be ploughed a little deeper when the next round of crops takes place, the lime will be brought to the surface of the soil. This practice would be beneficial when peat of any sort, or hard vegetable substances of any kind, are applied for manure.

Sir H. says, 'Inert peaty matter is a substance of the same kind, (alluding to tanners' spent bark.) It will remain for years exposed to water and air, without undergoing change, and in this state yields little or no nourishment for plants.'* Dr. Darwin recommends heaping peat either with or without lime, in order to expedite the decomposition of it.

This, with other accounts we have of the properties of this vegetation, induces me to believe, that Sir H. may be as mistaken about peat, as he evidently is, respecting woody fibre; which, he says, 'will not ferment, unless some substance be mixed with it, which acts the same part as mucilage, sugar, and extractive or albuminous matters, with which it is usually associated in herbs and succulent vegetables.'† Besides the exciting causes here briefly enumerated by this gentleman, there are others which have been mentioned by him :‡ some of these may not exist in some trees, and but little of them in others. Still, there is in every tree a sufficiency to predispose the wood to fermentation, when it is placed in situations fa-

* See his Lect. on Agr. Chem. page 285.

† Ibid. Here Sir H. seems to insinuate, that these matters are confined to herbs and succulent vegetables; than which nothing can be more erroneous.

‡ Idem, page 73.

vouring the process. The simple post, mentioned before, determines this;* so does the decomposition of the chips in our wood yards, but more especially the innumerable trees that time, tornadoes, &c. have prostrated in our forests.

Here we see, without being misled by erroneous theories, the processes of fermentation and decomposition, in all their different stages, as well as on the different plants which may claim our attention: but as woody fibre is the subject now under consideration, and the decomposition of it has been described, nothing more is necessary to be added, than that some woods rot very rapidly, others, more slowly, and some, either from a deficiency of those principles which favour fermentation, or other causes, decay so slowly, that they are like charcoal, improperly termed by some indestructible. However, the most durable woods are decomposed by time; and a shaded situation, where rain has access, greatly promotes the process.

This is best seen in the back-woods, where various causes induce the settlers to abandon a clearing soon after it has been commenced. In that case, the brush heaps sink soonest into decay. The heaps of logs, from their compact form, and being kept continually more or less damp, by rain and shade, rot much sooner than many would readily imagine, unless they happen to be formed of very durable wood.

If the philosopher, who wishes to study nature, would, in place of making a tour of Europe, where art has nearly obliterated her features, spend half the time and money in the interior of the United States, where the line of cultivation separates pure nature from art, he would not only see nature as she is, but by comparing her perfect system of economy with what art had done in the older settle-

* It should be recollected, that posts are commonly formed of the most durable and well seasoned wood the farmer can readily get.

ments of Europe, and what it was now doing in America, more especially in the vicinity of the wilds where nature presides, he would be far better prepared to write on any subject connected with her economy in the different processes on which vegetation depends.

As all our ideas arise, either directly or indirectly, from our senses, the more we are exercised on the subjects we wish to understand, the better we shall become acquainted with them.

An expert and intelligent artist, who has never seen nature as she really is, may draw an interesting likeness of her. It, however, vanishes when the original appears.

It is said that tanners' waste bark, when completely putrefied, affords an excellent manure; and that one load of it is equal to two of dung. This seems to be rating it highly; however, it may imbibe some animal matter from the hides. If so, it appears that it should be much sooner used, especially as the vegetable matter must also suffer considerable loss by lying so long.

It is also said, that if this manure be intended for grass, it ought to be spread in the latter part of September, that the winter's rains may wash it into the grounds; for if applied in the spring it will burn the grass. But if applied for wheat, it should be spread immediately before the last ploughing, to come in contact with the early roots of the plants.* It would, however, seem that but little is practically known of it. Mr. Young says, 'spent bark seemed rather to injure vegetation;'† he attributes this to the astringent matter that it contains. Sir H. Davy says, 'it is freed from soluble substances in the tan pit; and if injurious to vegetation, the effect is probably owing to its agency upon water, or mechanical effects;' and that it is

* It would appear much more likely to injure the tender roots of the wheat. Practice, however, in the back-woods, clearly determines that it will injure neither, unless the quantity be too great.

† See Sir H. Davy's Lec. on Agr. Chem. page 285.

'an inert substance, and remains for years exposed to water and air without undergoing changes.'*

These opposing opinions furnish one of the numberless instances in which gentlemen, whose talents are highly and justly esteemed, advance opposite theories; and clearly determine that nature and reason should be consulted by the farmer, before any practice be admitted or condemned by him. More especially as neither of these gentlemen is right.

As far the greater part of the astringent matter contained in the bark is expended in the tan pit, that principle cannot injure vegetation, unless too great a quantity of spent bark be applied.

Where tanning is judiciously conducted, and bark sells high, all the astringent matter that can be profitably used is extracted. Still, when that matter becomes too inconsiderable to pay the expense of attending the further use of it, the process ceases, and leaves the remainder in the water and in the bark.

As the principles which promote fermentation have been extracted to a considerable extent in the pit, tanners' spent bark cannot ferment so freely as bark from which none of those principles have been extracted, unless the animal matter imbibed from the hides may make up this deficiency; which seems to be a doubtful question. Therefore, where lime can be had on moderate terms, it may be brought much sooner into active use, by the application of lime in the way that has been recommended for using it with peat.

Sometime after trees are girdled, the bark begins to fall and the process goes on gradually. That from the bodies or trunks, which constitutes a considerable part of the whole, generally rests in the forks formed by the roots. Where bad cultivation prevails considerable quantities of it are often covered with the soil. In this state it appears

* See Sir H. Davy's Lec. on Agr. Chem. page 285.

to decompose freely; but if the quantity happen to be too considerable, vegetation languishes and looks sallow. The same, however, occurs, where any other vegetation that is but partially decayed, accumulates in excess.

It seems to be worth trying whether the liquid from the tan pits would not promote vegetation, after it was no longer useful for tanning.

But few rabbits are kept in this country. However, as their dung is very valuable, it should be saved.

Rape cake is also highly esteemed, and has been very successfully used for manure in England.

Linseed cake is said to be an excellent manure, but unless it has been damaged it is generally too costly to be applied to that purpose.

Malt dust is also said to be a good manure.

In fact the offals of almost every mechanical employment furnish materials for valuable manure. Even shavings, sawdust, and the chips and turnings from those working in wood. Therefore, it would be very tedious to enumerate the whole of them. Enough has been said to show that many manures, scarcely ever used in this country, are exceedingly valuable, and that much more attention should be given to them.

That water is a powerful promoter of vegetation is every where seen; but until I removed to this elevated situation, I had not so clearly seen the immense powers contained in simple rain water to effect that purpose.

The passing clouds more frequently water the soil; consequently grass abounds much more than in the same latitude where the grounds lie much lower.

Our summers are much cooler and shorter than in the same line of latitude below us. Yet Indian corn, when planted in time, and properly cultivated, seems to be equally productive. To that crop moisture appears to compensate for a deficiency in heat. Other spring crops, on equal soils, appear to excel those below us. The same may be

said of potatoes and turnips. I have grown the latter here without manure, and on rough grounds, not well cultivated, that weighed eight pounds.

Water is an important agent in promoting the fermentation and decomposition of animal and vegetable substances; and its fluidity is well calculated to convey the nutriment arising therefrom to the roots of the plants. It also constitutes a considerable portion of the bodies of plants, and as it has been before observed, is capable of dissolving most natural bodies, and also of imbibing and conveying their properties. Water parts with some substances previously to its descent in rain. Still, there is great reason to believe that it either retains, or gathers in its descent, enriching as well as fertilizing principles; as it soon becomes putrid in vessels which do not appear to communicate any of the causes of putridity to it.

Notwithstanding the numerous advantages derived from water, a superabundance of it, joined with a deficiency of heat, retards fermentation, and vegetation languishes and looks sallow, unless proper division has been made to carry off the excess. These effects are most pre-eminently seen in grain fields, especially in those of wheat sown in the fall where proper water furrowing has not been introduced.

The growth of the grasses is also considerably retarded from the same cause, but they are seldom very materially injured in this way, unless where the water becomes stagnant. If this occur, and very warm weather succeed, even grass may be greatly injured, and is sometimes ruined by a superabundance of putrefaction. If this be kept up by permanent spouts or springs, no valuable vegetation can exist; except near to the head or fountain of the springs, where it is generally luxuriant, and will often continue to grow through the winter, when vegetation is every where else completely locked up by the frost. It seems that the water passes off too soon near the spring to acquire sufficient putridity to injure the grasses.

This should teach the farmer the great impropriety of cultivating wet grounds, until he has properly drained them, unless ridging and water furrowing them in the way that will be hereafter described will answer the same purpose.

However, where the grounds are free from spouts or springs, this supposed excess of moisture, which cultivators who farm in every clime and soil alike consider a great disadvantage, may with proper management be turned to certain profit. It is not very difficult to make provision to run off an excess of water from rain; but where enough of it is wanting, it cannot be introduced in sufficient quantities for agricultural purposes, but by an expense entirely inconsistent with the economy of farming.

Hence it is that the grasses, and cultivated crops, in climates subjected to what is too generally considered a superabundance of moisture, are, when properly ordered, green and luxuriant, while those growing on lands which are much more highly esteemed are parched with drought.

Farmers who have exercised too little observation, and of consequence, as was before observed, farm in every clime alike, say, those dripping climates are excellent for grass, but very unfit for grain. It may, however, be laid down as a maxim in farming, that where real good grasses abound, grain will also abound, if a proper system of husbandry be pursued.

England is a northerly and moist climate. Still, grain prospers there, and would prosper as well, perhaps better, in Ireland, if as good a cultivation prevailed.

But it should be recollected, that the well instructed British agriculturist does not expect good crops of grain from an exhausted soil, unless it has been previously well manured, and if the soil requires it, laid dry; not only by proper water furrowing, but by laborious draining also, if that should be considered necessary.

It is generally believed that the atmosphere is laden with substances which greatly promote vegetation, and also enrich the soil; particularly when the latter is well covered with plants calculated to gather and shield those depositions from the improper action of the sun and air. Still, the great importance of gathering and securing them is not sufficiently appreciated; or a cultivation and management immediately opposed to it would not so generally prevail.

Their value is demonstrable, if it be granted, that all the improvement made in any soil with its own produce alone, must proceed from the enriching and fertilizing principles derived from the atmosphere; especially if the grain and roots grown on the farm be principally sold, and the principal dependence for enriching it, rest on feeding the hay and other fodder to cattle on the place, and using the straw and offal vegetation for litter.

Under circumstances though not exactly alike, but in substance the same, an improvement of nearly fourfold was made, in the course of five years, on a farm with which I was, at the time this was doing, intimately acquainted, and witnessed the progress of the improvement. It was determined, by estimating the value of the different crops; and the soil appeared to me to be fully as much, if not more, improved, during this time, than the crops had been. Some extraneous assistance was had recourse to; but more manure remained on the farm unapplied when this estimate was made than equalled the value of the foreign aid introduced by the cultivator.

The farm contained about one hundred and six acres of ground, of which about fifteen acres were thinly set woodland. The leaves from the woods were generally, but not always, used for litter. However, the loss to the soil from the sale of nearly all the grain and roots, must have very greatly exceeded the advantage derived from the leaves, although their value was not deemed inconsider-

able. Now if this improvement did not arise from the enriching principles existing in the atmosphere, it is difficult to devise how it could have happened.

Although the hay, grass, straw, &c. were made into better manure than it is probable these substances afforded in their native state, the cattle which were fed on the hay, grass, corn fodder, &c. were bought in lean, and sold out to the butcher fat. They of consequence took away with them more enriching matter than they brought; and all the enriching matter left by them in the dung, was the produce of the food eaten by them. But it should be observed that the fields which were not under cultivation were in grass, and so managed, that they derived every advantage which might be rationally expected from the rich matters floating in the atmosphere. The dung was carefully gathered and ploughed under the soil, previous to any material waste from fermentation. However, the cultivation of the crops was too seldom calculated to save it from useless waste.

I have mentioned before, that as maize is large, the economy of it is more readily observed than that of many other plants, and that it may be clearly seen that this plant gathers much of the nutriment by which its ears are formed and matured from the atmosphere.

The economy of the kidney bean, together with that of all the plants, which penetrate the soil, with the seed from which they vegetate attached to the extremities of their stems or plume, demonstrates, that nature has ordered or contrived plants so, that they have the power to convey the nutritive matter found in contact with their tops, throughout their whole general system, equally as well as that imbibed by their roots. This very interesting part of the economy of nature has also been very ingeniously determined by art, as by planting the tops of some kinds of trees in the ground, and elevating their roots in the air, the buds which usually form leaves become roots; and

those which when in the ground, formed roots or radicals, were changed into leaves, flowers, &c.

The kidney bean, when it comes up through the soil, brings the seed with it. The bean, in the process of vegetation, is split lengthwise. The colour of it is but little changed, and but little of the nutritious matter seems to have been exhausted previously to its appearance above the soil. After this, the two sides separate wider apart, and seem to flatten more or less daily, until they are formed into leaves; the colour of them gradually growing greener, in proportion as the nutriment contained in them is exhausted by the infant plant. My examination of the leaves formed by the bean, has unfortunately been carried no further. Therefore I do not know that these leaves grow as large, and are as perfectly formed as the other leaves of the plant.

Dr. Darwin says, 'The seed lobes of this plant are converted into leaves, and perform the office of lungs.' But he is certainly mistaken in saying, 'they have given up beneath the soil the nutriment which they previously contained.'* This is a very gradual and a highly important process of nature, whether it be performed either above or within the soil. In the case of the kidney bean it is, however, evident that this process is principally performed above ground.

The thinning and suckering of maize, has ever appeared to me to be a very important part of the proper management of that crop. Therefore, I have given much personal attention to both; and have pulled up plants from twelve to fifteen inches high, with a part of the seed still attached to the root: but in common it is decayed before the plants are so large.

However, so far as my observation has extended, it would seem, that the fermentation and decomposition of

* See his Phytol. page 23.

seed greatly depend on the exciting causes found in contact with it. This appears to be still more probable, as we all may see that seed vegetate very precariously when sown in an old worn out soil: also, that on such soils the seed of those grasses which require much nutriment, remain torpid until the grounds are enriched.

Those circumstances seem to show, how it happens that plants from seeds coated with gypsum, previously to their being sown on a thin soil, are so much more luxuriant than those sown on the same description of soil, without being covered with that substance.

The gypsum hastens the decomposition not only of the richer matters stored up in the seed, but also the outside covering of it which is less nutritive, and of consequence sinks lower into decay. It would appear, however, that neither of these substances is soon enough decomposed by the feeble fermentation which occurs in a thin soil. Therefore the plant growing from seed thickly coated with gypsum, is well supplied with the nutriment which nature has prepared for its support during its infant state. This causes the organization of its system to be much more perfect and robust;* and of consequence much better calculated to perform the functions of life, than a plant which, from a slow and scanty supply of the same kind of nutritious matter, becomes debilitated, and of course much more imperfect in the organization of its system; therefore has not sufficient strength or power to extend its roots deep and wide, in search of the thinly scattered nutriment afforded by a poor soil. As the tops of plants thus circumstanced are equally as much debilitated, and as imperfectly organized, as are their roots, but little nutriment can be gathered from the atmosphere by them.

Here again we see the close analogy which exists be-

* No question but the gypsum with which the seed is coated acts powerfully on the animal and vegetable matters found in contact with it, and that this, like leaven, spreads fermentation.

tween plants and animals. If a pig or calf be weaned while it is young, or can obtain but a scanty supply of the nutriment provided for its early support, and the husbandman does not supply this defect by proper nutritious food, we observe that the animal becomes meagre, feeble, mangy, pot-gutted, inactive, and its hair is long, dead, and shaggy. In fact the organization of its whole system commonly becomes debilitated and deranged. It also seldom happens that an animal which has been thus neglected and stunted, can ever be so much restored as to attain the same perfection as those that have been well provided for during their infancy.

In the fall of 1814, I turned under a soil thinly set with native grass, principally white clover; but as it has been my lot to follow perpetual ploughers, or rather scratchers of the soil, it was thickly set with brambles and sprouts from the roots of the girdled timber. The soil had been much exhausted: it had been, however, long enough abandoned by the man who had destroyed the timber, and ruined the soil, to be covered by nature with the vegetation above described. Early in the ensuing spring, wheat was sown on the lay. This was covered by the tined harrow, and red clover seed sown on it. The wheat plants generally looked weakly, as soon as they penetrated the soil, and in this state they continued, until the crop was matured. It would appear that the energy of the plants was not sufficient to penetrate the slowly decaying sod formed by an impoverished soil, in time to obtain a tolerable supply of nutriment from it.

The crop was so scanty that it determined me to procure ashes to dress another field of the same description of soil, and exactly in the same condition, which I had resolved to lay down in red clover, by the same mode of management. It, however, so happened that but few ashes could be saved, and these were more or less injured by rain. They were spread over about half the field, but

so thinly that little perceptible good was expected from them. This induced me to coat the whole of the seed with as much very finely powdered gypsum as would adhere to it. The plants, on their first appearance, looked healthy and vigorous, as well where the ashes had not, as where they had been spread, and so they continued to do. I am now reaping the field, which, from first to last, has caused much surprise to all my neighbours, who knew the grounds, and how much they had been exhausted; especially those who had examined the product of the first mentioned field. I believe the produce of the present field cannot be estimated per acre, at less than double that of the former one; although the soil, cultivation, and condition of both were exactly the same; except that no gypsum was employed in the former instance. The crops of spring wheat were generally quite as good, if not better, last year, than they now are. I will conclude my book on vegetation and manures by observing, that the manures arising from the tops and roots of the grasses ploughed under the soil, are so closely connected with cultivation, that the best modes of obtaining them, will naturally occur in a description of that cultivation best calculated to gather, apply, and preserve them from waste.

In this description, which will appear in my next book, it will, I trust, be clearly seen, that incalculable advantages may be obtained, from the proper application of the roots and tops of the grasses for manure; that they may be so applied and managed as to produce at least double the advantage, both to the crops and the soil, that has been obtained from them by the too general mode of management. Also that the grasses in the hands of a judicious cultivator are nature's certain restorative; the only rational means by which the farmer will be enabled to restore exhausted soils, and keep them with that part of their own produce *alone*, which he may readily spare, constantly

as well stored with decaying animal and vegetable matter, as they were when subjected to the simple but wise economy of nature alone. Likewise that an immense loss in the tops and roots of the grasses, and also in farm yard manure, as well as in the fertilizing principles floating in the atmosphere, naturally arises from the present too general mode of management, both in the application, and cultivation after they have been applied. And that, by a proper system of husbandry, these losses may be readily avoided, and the value of the crops greatly increased; the soil enriched, in place of being exhausted, and far better prepared for succeeding crops, with much less labour and expense than generally occur in the usual way.

After this has been done, if the reader will sum up the various losses in manure, that naturally arise from the present too general mode of gathering and managing of it, and also from an injudicious and irrational cultivation, he will certainly find them excessively great.

When calculations are made on principles that cannot be certainly established, they will not be correct. Still, it seems probable, from what has been generally advanced, and also from what happened on the farm mentioned above, that if the immense sums of money or labour expended in the useless and destructive attempts to make animal and vegetable matter a better food for plants, also in a laborious and injurious cultivation, were spent in procuring the litter and saving the dung, which is now too generally wasted, that the produce of the United States would be at least doubled in the course of five years; without estimating the aid which may be derived, during that time, from the increased agricultural capital and population, that is to be expected from the great influx of foreigners, or in fact any other aid, than that of proper management."

Remarks on Mr. Lorain's ninth chapter.

We wish our farmers generally would attend to the remarks of Mr. Lorain and of Sir Humphrey Davy on the use of manure from privies. If it be true, "that five loads to the acre have renewed exhausted soils, and that two loads per acre *annually* applied have excited and maintained luxuriant vegetation," it is surely a subject of vast importance to farmers. We fear that this species of manure is not used, except by the farmers near the capital; but private families in the country might employ this most powerful of all manures at a very small expense. We would suggest a mode of making this manure very valuable, at a trifling cost. The buildings are easily removed. Let the vault be dug, and its bottom covered with clay if within reach. The clay should be tempered, and rammed hard. Even the sides might be lined with clay at a small expense. Where clay cannot be obtained, let the bottom be *puddled;* that is, the earth saturated with water and then rammed down hard. As it is proposed to clear this pit out every year, let it be filled to within two feet of the surface with straw or leaves and earth, laid in loosely. In this way, all the animal matter, fluid and solid, will be preserved. The Chinese use clay, and make the whole into cakes; but this is a labour, which farmers in general will not perform. To make this manure easily accessible, the building may be raised on posts, and entered by a few steps: it may be surrounded by a bank, raised above the surface two or three feet, covered with sods, to make its external appearance neat. One side only need be opened, and the contents evacuated by hoes and other instruments in a short time, if performed annually. The earthy and strawy materials will render the process less nauseous.

This manure, applied to squashes, pumpkins, or any other garden crops, would last (we speak from experience,

having applied it to grape vines,) from five to seven years. If Mr. Lorain is in any degree correct in saying that five loads will fertilize an acre, the contents of a privy in a large family would be at least equal to the manure of three or four horned cattle. These details are perhaps too minute, but the amount wasted of the most valuable manure is certainly much greater than most farmers are aware of. When Mr. Lorain remarks, that "when potatoes, or any other root which can only be gathered by turning up the soil, is planted, the use of weeds should be avoided," it should be received with this very important qualification,—weeds should never be used in *any* soil, or for *any* crops, unless they are cut before any *one* seed ripens. Sluggish and careless must be the farmer who suffers any of his weeds to perfect their seeds. They should not be thrown into the pig sty after they have ripened their seeds. But there is a remark, which should not have escaped Mr. Lorain; that if they are not ploughed in, they will shed their seeds on the ground, and the chance of their being checked, and even destroyed by rotting, is much greater when ploughed in below the surface, than when left *above* it. We have before stated, that we consider a rich crop of weeds not only *not* an evil, but to the spirited cultivator a blessing. It may be said, that this is a contradiction to the caution, not to suffer them to ripen their seeds; but that caution was designed for those who never plough and hoe till they see their weeds "breast high." There is one exception as to the utility of weeds or noxious plants; that is, to those plants which propagate by their *roots*, such as couch grass, sorrell, and the nettle. Such plants should be entirely *extirpated*. The process is very laborious, but it is some consolation to the farmer, that this extra labour is not lost; for the minute subdivision of the soil, which this labour compels him to make, is useful not only to the existing, but to all future crops.

Mr. Lorain is the only writer, whose works have met our

eye, who has adverted to the use of the ashes of *mineral coal*. It has not been for want of research that it has escaped our attention, but he adverts to some authorities unknown to us.

He says, that personally he has not experienced any benefit from the use of them, but that they have been extensively used for manure at the rate of from forty to fifty bushels the acre.

This is a question of some importance in New England. The ashes from our own personal consumption of the *anthracite* coal amounted to twenty bushels, and several more from a green house. The use of this coal in the numerous manufacturing establishments renders this question, one of considerable importance. We applied these coal ashes to a dry sandy and gravelly hill, and also to a very wet meadow. Six weeks, only, have elapsed since the trial. On the hill, the ashes have brought in a very clear and decided increase of grass. Whether this is owing to the ashes, or to the minute parts of the carbonic coal, not consumed, we cannot say. We have the greater doubt on this subject, as it has been stated on authority, the value of which we have had no means of testing, that pulverised anthracite coal is valuable, as a manure. As to the wet lands, to which it was applied, it must remain doubtful, whether its apparently useful effects, were merely mechanical, or whether it operated as a manure. Most certainly the question is of considerable importance, when we know, that 4000 tons of this coal are annually consumed here, and the future consumption seems to be illimitable.

Mr. Lorain speaks of tanners' bark, as of questionable utility, but without *denying* it. That it is useful to trees, we know by long experience; whether by keeping the ground open, or by affording nutriment, or both, we cannot at present say. There is one fact, however, which has great weight with us. One of the most intelligent cultivators, and one of the most successful, Deacon Corey of

Brighton, we have remarked for many years, has made very extensive use of bark in his compost heaps. Many other farmers have used it in their pig sties, as a means of increasing their manure. There can be no question, that oak bark, which the English farmers use *alone*, is much more easily decomposed, than the hemlock bark. The reason is very obvious, that the resinous plants longer resist the effects of putrefaction, and are, of course, decomposed with more difficulty, than that of trees, which are not furnished with resin. Rot, however, they *all finally* must, and those, who are within the reach of this material, which has been generally wasted, would do well to avail themselves of it. Even the fastidious Mr. Lorain, (opposed to all the means of hastening the process of rotting vegetable substances), probably would have consented to the use of lime, in accelerating the decomposition of *tanners' bark.*

We shall now take leave of Mr. Lorain, for the present, with the hope of renewing our acquaintance with so intelligent and able a writer, and a thoroughly experienced farmer. We began, with the intention of examining his whole work, in the same minute (though we are conscious) imperfect manner; but we soon found, that we must either dogmatize (as it seems to be the privilege of reviewers to do) or meet the author on fair, and equal ground. We have preferred the latter, as the most useful course. The delay is of little moment, because Mr. Lorain's work is so expensive; so full of learning, and book reading, that it will be seen by a few educated farmers *only*; and when we resume the subject in our next number, it will be as fresh, and new to most of our readers, as if we had finished it now.

What we have at present done, may have the effect of inducing many to look at the work, and surely, it will be no small recommendation of it, to perceive, that its *first* book has elicited so many remarks, and is so full of in-

struction and matter, as they must perceive it to be. If in the course of our remarks, we may have appeared to be, in any case uncandid, we can truly say, that it was without intention, and that we have only followed the example of our author in expressing our opinions fearlessly, without favour or affection.

NEW PRESENT OF FRUITS TO THE CITIZENS OF THE UNITED STATES, BY THO. A. KNIGHT, ESQ.

It would, indeed, be an unpardonable neglect in the Trustees of the Massachusetts Agricultural Society, to fail in putting upon record, in their journal, the following generous and public spirited letter from Mr. Knight. It should be known, that the box mentioned in the following letter, was a duplicate. Mr. Knight having despatched the same plants a year before, which, owing to the negligence of a carrier, were utterly lost; I am now able to state, more precisely, the fate of the trees and scions sent, though many of the scions are still in a doubtful condition. There were six pear trees sent, which are *all alive*. Three of them are known; Oakley Park No. III; Downton No. V; the Lowell pear ripening in England as late as May; three trees are unknown; the labels having been detached on the passage. There is a moral certainty, however, that these are No. I, II, and IV. All the other pears in Mr. Knight's list were sent as scions; they were all numbered by notches on the scions clearly distinguishable, but there were no scions marked I, II, and IV. Of course, the trees whose labels were lost, were these numbers; but we shall only know them when they bear fruit, unless Mr. Knight shall replace them, which we have no doubt he will. The nectarine trees are all alive; so are the cherries and the fig trees, and the Siberian apple, so highly praised as a cider apple.

As to the scions: No. VII, the one most highly spoken of by Mr. Knight, are growing and out of danger. No. XV. is also growing; so that of the pears in my possession, eight varieties, entirely new, are secured. Some others are yet fresh, and may grow. I divided the scions between myself and Gorham Parsons, Esq. whose great accuracy, and care, recommended him to me, as one of the fittest persons to secure the feeble and unpromising grafts. I have not heard what has been his success. The grapes, the Verdelho, and *striped fruited* grapes, were cuttings; two of the first, and one of the second, are now growing. Some of them were grafted into the roots of other grapes, and are also growing.

I have now only to add, that in July I shall be ready to give buds to such as may ask for them, till the stock shall have been exhausted; and I beg it may be considered, as a special favour to me, that persons disposed to take care of them, shall apply for them. It is a trust for our country, which I am anxious to discharge with the fidelity, which Mr. Knight expects from me. He considers me as his agent to spread these fruits as widely as possible, and I would endeavour to show, that the confidence has not been misplaced.

JOHN LOWELL.

Roxbury, near Boston, Mass. June 5, 1828.

From the New England Farmer.

The friends of Horticulture will be pleased to learn that the following letter was received by the last Liverpool and Boston Packet, from Thomas Andrew Knight, Esq.

Downton, March 6, 1828.

JOHN LOWELL, Esq. Roxbury, Mass.

DEAR SIR,—Two causes have prevented your receiving my thanks for your letter of last autumn, and for the medal which I had the high honour to receive from the Massachu-

setts Agricultural Society. At the period when the medal came into my hands, an inflammation of the eyes precluded the use of my pen; and, shortly after, my *only son*, a young man of whom I had every reason to be proud, was, while shooting in my woods, mortally wounded by one of his companions, and died the next day. My life has since been, and I fear will continue to be one of wretchedness. But I am not the less sensible of the honour I received by the medal of the Massachusetts Society, to the members of which I request you to present my warmest thanks. I send you a box of plants, and grafts of several new varieties, of pears of more hardy habits than those formerly sent you, with some other varieties of fruits. You will see a description of them as far as I am able to give one in the Horticultural Transactions. I add a list on the other side, and also attach on a parchment nailed to the lid of the box, another list, so that you will know them should this letter miscarry. The Dutchess D'Angouleme pear is large and beautiful, but I do not think very highly of it. The Gloria, and the D'Aremberg are very superior to it. You have both the varieties, the former sent to you by me under the (then known) name of Colmar d'hyver.

I shall send a plant and some grafts of a new cider apple, the Siberian bitter-sweet, described in the Hort. Transactions.

Your country may possibly be too warm for it, but it will bear most profusely any where, and it yields a cider as free from acid as the wines of any country.

CONTENTS OF THE BOX.

Nectarines. Four new varieties—No. 1, Downton—2, Althorp—3, Jekworth—4, Imperatrice.

Figs. No. 1, Nerii—2, Lee's perpetual bearer.

Pears. Four varieties *labelled* from the Horticultural Society, of great excellence. Also,

No. 1, Jekworth—2, Althorp—3, Oakley Park—5, Downton—6, Hampton Court, (grafts of another variety are mixed with these)—7, Wormsley Grange—9, Garnstone—10, Powis Castle—11, Foxley—13, Burghill—14, Rouselench—15, Capel. All these varieties succeed well in Herefordshire as standards—*all new*. The *original trees* only of *several* at present exist.

Also the Elton cherry, which failed with you before; one fine new strawberry, and the Pitmaster scarlet strawberry. I send a plant and cuttings of a pear which I have named for you, the *Lowell pear*. Our climate is hardly warm enough for it, but in yours I think it will prove excellent, and a very productive variety. No 7, requires to be gathered before it is quite ripe. It is in Herefordshire a variety of first rate excellence, rivalling the Brown Beurre, in its most perfect state. Should there be any variety of fruit or other article described in the Hort. Transactions, or *in any way known to you to exist in this country*, which you may wish, or I can send to you and my *American friends*, (for I venture to call them *such*) I beg leave to assure you that you will gratify me by giving instructions to send them.—I remain, my dear sir, sincerely your's,

T. A. KNIGHT.

No comment can be necessary on this liberal and most honourable letter. The box is not yet delivered; I am unable to say, therefore, what is the state of the plants. I shall only add, that the donation is made to *our Country*, and as such I shall, as I have ever done, treat it. Buds and scions shall be distributed, as fast as they are produced. No man need feel the least delicacy in asking for them; till they are exhausted, they will be annually delivered to the first applicants without favour or affection.

JOHN LOWELL.

Roxbury, May 1, 1828.